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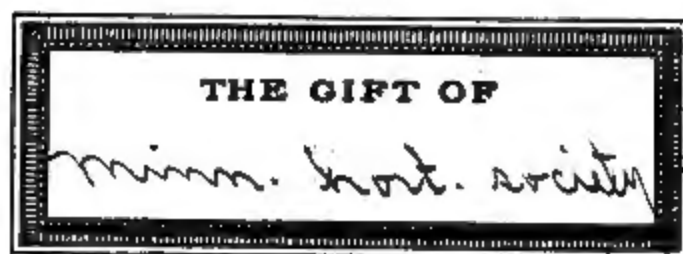
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N. E. Hansen

BROOKINGS, S. D.

Horticulturist at the South Dakota State Experiment Station.

Trees, Fruits and Flowers

—OF—

MINNESOTA.

1906.

EMBRACING THE TRANSACTIONS OF THE
MINNESOTA STATE HORTICULTURAL SOCIETY

FROM DECEMBER 1, 1905, TO DECEMBER 1, 1906, INCLUDING THE TWELVE
NUMBERS OF THE "MINNESOTA HORTICULTURIST" FOR 1906.

EDITED BY THE SECRETARY,

A. W. LATHAM,

OFFICE AND LIBRARY, 207 KASOTA BLOCK,

MINNEAPOLIS, MINN.

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No. 1

Biography.

PROF. N. E. HANSEN, BROOKINGS, S. D. ♦

Niels Ebbesen Hansen was born Jan. 4, 1866, near Ribe, Denmark. His paternal grandfather was a large farmer of much local prominence, holding one township office for fifty-three years, and being honored by the king with the order of Dannebrog. His son, Andreas Hansen, father of the subject of this sketch, was an artist of much ability and also rendered valiant service as soldier in the Danish-German war of 1848-50; afterwards spending five years in study and travel through several countries of Europe. The family came to America in 1873, living the first three years thereafter in New York and New Jersey. In 1876, Des Moines, Iowa, became the family home.

In his earlier years many spare hours were devoted by young Hansen to books and long tramps through the woods alone, collecting natural history specimens, such as butterflies and other insects; even while in Denmark the adjacent seacoast was ransacked for shells, coral and seaweeds. School was begun when eight years of age, and the East Des Moines high school entered at thirteen. After two years here, Hon. J. A. T. Hull, then secretary of state and now congressman from Iowa, noticed a flaxen-headed boy frequently prowling around among the solid books of the State Library and gave Niels, an entire stranger to him, a place in his office. After two years here, college was next in order, and after four years at the Iowa Agricultural College, at Ames, Niels graduated in 1887.

Entering the college with the intention of becoming an editor, his life plans were changed by the twice-a-week freshman lectures on horticulture by Prof. J. L. Budd, who at that time was enjoying vigorous health and had just returned from his Russian explorations of 1882. Professor Budd possessed a wonderful faculty for inspiring abiding enthusiasm in his students and giving them the

deep, underlying philosophy of horticulture, as well as the practice. The subject of Mr. Hansen's graduating thesis was "The Crossing and Hybridizing of our Native Fruits," and as a student he worked considerably in the horticultural department.

The year after graduation was spent in the nurseries of Hon. Silas Wilson, at Atlantic, Iowa, and the succeeding three years in the nurseries of Hon. C. L. Watrous, at Des Moines, Iowa. In 1891 he was called from this position to that of Assistant Professor of Horticulture at Ames, the first college assistant Professor Budd ever had. Much work was done under Professor Budd's direction in various experimental lines.

In 1894 four months were devoted by Prof. Hansen to a study of horticulture in eight countries of Europe, including England, Germany, France, Russia, Denmark, Austria, Holland and Belgium.

His position with Prof. Budd was given up in the fall of 1895 to accept the position of professor of horticulture at the South Dakota agricultural college and experiment station, which position he has held ever since.

In June, 1897, Hon. James Wilson, Secretary of Agriculture, sent Prof. Hansen on a ten months' tour of exploration in Russia, Transcaucasia, Turkestan, western China and Siberia. Over five carloads of seeds and plants were secured, including twelve tons of the Russian form of *Bromus inermis*, or Brome grass, and a hardy form of alfalfa from Turkestan, and now known as Turkestan alfalfa. In spite of initial difficulties this alfalfa is becoming firmly established, although genuine seed is still very scarce. Getting on the trail of this plant, this young explorer, confident that the Viking blood in his veins would carry him through, followed the trail for one thousand three hundred miles in a wagon and seven hundred in a sleigh, until the trail was lost in the snowdrifts of southern Siberia, at the end of the season, near Kopal. At one time his equipment consisted of an interpreter, eight horses, three drivers and two sleighs. After securing seed of this plant from eight different sources, Prof. Hansen chose to strike northward 700 miles to the Siberian railway at Omsk, instead of going back 1,300 miles in a wagon to the Transcaspian railway. Some very serious conflicts with Siberian blizzards ensued, and this is a part of the subject he does not like to refer to. In another caravan two teamsters were frozen to death.

Ever since his two Russian trips, Prof. Hansen has insisted that a fair trial should be made in the prairie northwest of the pure Siberian crab, *Pyrus baccata*, as a stock for apples, that being the way

the Russians solved the root killing problem. The entire root system should be Siberian, and the entire top cultivated apple. The hybrid Siberian, *Pyrus prunifolia*, is also available for this work of reform in apple propagation. Professor Hansen is making a specialty of breeding hardy fruits for the prairie northwest, and with over a quarter million of seedlings the work at Brookings is second in extent only to that of Luther Burbank, of California, and in number of northwestern fruits the number is even larger. The plan is outlined by Prof. Hansen in three words: Exploration, the collecting of native species; Importation, gathering of species of promise from many parts of the old world; Amelioration, their improvement by crossing and hybridizing. The most progress has been made with strawberries, raspberries, plums, sand cherries and sand cherry hybrids, hybrids of native plums with Chinese apricots and Japanese plums, and with hardy roses. No plant is saved that does not endure unharmed 40° below zero F. without winter protection or mulch of any kind. The past season a plantation of over 25,000 western sandcherries of the third generation was gone over, and seedlings measuring 7-8 to 1 inch in diameter and of good quality were secured. Mildew resistance is also aimed at in this work. In apple seedlings he insists that at least one of the parents be strictly hardy.

Prof. Hansen no longer saves the original seedling, claiming that the only true test of hardiness is propagation. He is ruthless in destroying half-hardy and tender plants. In the hybridizing and crossing work he has the distinction of securing from the legislature of 1891 the first fruit-breeding greenhouse ever constructed. The pollinating work is done mainly under glass, and over three thousand trees are grown on dwarf stocks in pots, tubs and boxes for use in the work. With inexhaustible patience, Prof. Hansen goes at the solving of commercial fruit growing problems for the prairie northwest, and displays originality and ingenuity in his methods. In his own words: "From the ashes of millions of seedlings will arise, phoenix-like, the new creations which are to dominate our future prairie pomology."

On Nov. 16, 1898, at the home of the bride's parents at La Crosse, Wis., Prof. N. E. Hansen was united in marriage to Miss Emma E. Pammel. Mrs. Hansen graduated in 1894 at the head of a class of over seventy members from the Iowa Agricultural College, later receiving the degree of Master of Science. Some of her original scientific investigations were published in the proceedings

of the Iowa Academy of Science and in the scientific periodicals in Germany and elsewhere. An ideal wedded life was terminated by the death of Mrs. Hansen at Brookings, S. D., December 16, 1904. The union is blessed by two children, Eva and Carl.

In recognition of his valuable services to northwestern horticulture, at the annual meeting of our society in 1899 Prof. Hansen was unanimously elected an honorary life member of the society. His regular attendance at our annual gatherings now for many years and the numberless other things he has done and is still doing in increasingly larger measure for the art we foster ever increases our obligation. Still a young man, in the early prime of his life, we look forward confidently to his certain achievement of many successes in his chosen field of horticultural work, in the results of which we must necessarily be a sharer.—Secy.

ANNUAL MEETING, 1905, MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SEC'Y.

The easiest way to describe this meeting would be to refer to the program of the meeting, which will be found in the annual report of the society for 1905, as this program was carried out almost in its entirety. With two or three exceptions all of those who had accepted places on the program were present, one of the absentees, unfortunately, being Prof. J. C. Blair, of the Illinois Experiment Station, who was to furnish an illustrated article on "The General Storage of Orchard Fruits." He was detained away through no fault of his own, on account of imperfect connections enroute to the meeting.

The attendance at the opening session was the largest ever present at any meeting of the society, the audience room being practically filled.

Pres. Wedge was unable to be present, having been taken ill a few days before and not being sufficiently recovered to be in his place at the meeting. Prof. S. B. Green, by request, presided, and Pres. Wedge's illness continuing to detain him away the chair was filled by Prof. Green throughout the meeting, and under his skillful and happy management an overfull program was worked off with such promptness that only in a single instance did a paper go over to the next session, and that was previously arranged on account of a vacancy certain to occur in that session.

Pres. Wedge's address, when read, was found to contain as the crux of the address the practical suggestion of an inner circle of members of the society who are willing to undertake to grow seedling fruits and flowers for the production of new and improved varieties. The attention of our readers is called to this suggestion as it appears in the address referred to, which will be found printed in this number. The nurseryman's program so-called, though it fitted in equally well for the planters of nursery stock, proved to be a drawing one and brought to the meeting an unusually large number of nurserymen, whose presence contributed much to the special interest of the occasion. The Woman's Auxiliary fully occupied the time allotted and gave us one of the best sessions of the meeting. A number of requests have come in for the publication of the articles presented at that session. The calendar program for May and June on Thursday morning was fully represented, every number being in its place. These papers with the discussions accompanying them will be found in the May' number of our monthly. The Forestry Association had a very full and interesting session. It would be invidious to refer to any one special number on that program as deserving unusual notice, if it were not that Geo. H. Maxwell, representing the National Irrigation Association, has a wide reputation as public speaker and was there from abroad upon urgent request. All interested in knowing the present status of these two important subjects, forestry and irrigation, should study his address carefully as it will be found in a later number of our monthly. The Friday-morning session was devoted to storing and marketing the fruits of the garden and orchard, and the subject was treated from many standpoints, including those of the grower, dealer and shipper. The climax of the meeting, as it was intended it should be, was the last session of the last day of the meeting, when the subject of new varieties of fruits held the boards and an intensely interested audience for two and one-half hours, considering it both from a theoretical and practical standpoint. The writer would suggest that it would be worth while to look up the program of this, as well as other sessions of the meeting, to be prepared by its study for the appearance of these various papers noted therein as they are published from time to time in our monthly.

The general attendance at the meeting, was, as near as we can judge, a little beyond that of the year before, the sessions averaging from 150 to 250. From other states we had the pleasure of entertaining about the usual number of delegates, Prof. E. P.

Sandsten, horticulturalist at the Wisconsin Experiment Station, representing the Wisconsin society. We had with us, also, from that state throughout the meeting our old friends, A. J. Philips and G. J. Kellogg. Iowa was represented by Mr. Charles F. Gardner, of Osage, he standing delegate for both the state and the northeastern societies. South Dakota society was represented by its president, M. J. DeWolf, and Prof. N. E. Hansen, its secretary. C. W. Harrison, of York, Neb., for the third consecutive year represented the society of that state. Mr. Wm. G. Scott, of Winnipeg, was present during the meeting as the representative of the Winnipeg society. Some of the local societies also had representatives present, but not all.

Eighty-five persons in all had places on the program, but there were many others who had official duties given them at the meeting, as ushers, reception committee, judges and attendants, and many who were assigned to special places in connection with the discussions, so that a very large proportion of those present had something to do with the program and were interested in the meeting enough to bring them and keep them there throughout. It is a self-helpful society that works, we believe, each for other and for the common good.

The exhibit of fruit was very much the same in quantity as the year before, the exhibition room being well filled, but there was a noticeable improvement in quality, in color and size over the previous year, so that we are congratulating ourselves that this is the best exhibit yet made. In the class of apples kept in cold storage there were 475 plates shown, consisting of forty-four varieties. Of the varieties not cold storage were exhibited 250 plates, representing fifty-two varieties. There were 275 plates of seedling apples on exhibition, of which, however, only ninety-two varieties were entered for competition. The prizes on early winter seedling apples were divided among ten exhibitors, and on late winter seedling apples among fourteen exhibitors, the standard being placed high enough so that only those which had real commercial merit were awarded a part of the pro rata premiums offered. The failure of any seedling exhibit to receive a premium this year should not deter any from exhibiting the same variety again, as these fruits vary much from year to year and the standard of award will also be found to vary. We are desirous that all seedlings should be shown for a number of years, so that comparative position as to commercial value may be well established.

Eleven pecks of Wealthy apples were on competitive exhibition, five of Northwestern Greening and eight of Patten's Greening, and several of other varieties were shown for which no premium was offered. For full particulars concerning these awards the premium list following this article should be consulted.

The annual election passed off with no special interest, as it seemed the purpose on the part of the members to continue the present list of officers without change, and they were re-elected with no opposition.

Reference should be made to the resolutions adopted with practical unanimity at the meeting of the Forestry Association in favor of the Cass Lake Reserve, a subject that was under consideration at that time.

As usual the crowning event of the society was the annual banquet, which was held, as for a number of years past, in the splendid building of the Young Womans' Christian Association, where we partook of a substantial supper and listened to an interesting and well rendered program. Like reasonable people we all went home at half past ten in an entirely satisfied frame of mind. Dear reader, if you are not one of those who have been present at this function heretofore, don't miss the opportunity that will be presented to you another year. One hundred forty-three sat down to the supper table on this occasion, and many were turned away who could not be accommodated. The following program will give a little idea of what took place there:

BANQUET PROGRAM.

Toastmaster..... S. M. Owen
Minneapolis

GraceG. J. Kellogg
Janesville, Wis.

SUPPER AT 6:30 O'CLOCK

EXERCISES.

1. Violin SoloJ. W. Shuman
Minneapolis

2. A spectre at the feast—prepare to shudder.....
.....Prof. N. E. Hansen
Brookings, S. D.

3 The problem of life—to make two bites of a cherry.....
.....Prof. Harry Snyder
St. Anthony Park

4. The man who sells the nursery stock, from the standpoint
of the buyer—what is left of him.....D. S. Hall
Buffalo Lake

5. Scotch Song—Selection.....Peter Cochran
Excelsior
6. Grafts and grafting.....Mrs. Lydia Phillips Williams
Minneapolis
7. The race is not to the swift—but to the man from Iowa..
Chas. F. Gardner
Osage, Ia.
8. The days go by—a word for the pioneers.....A. J. Philips
West Salem, Wis.
9. Song—"Auld Lang Syne".....Peter Cochran

We feel that the cause of horticulture has been advanced with this meeting. It was replete with valuable papers and discussions by practical men, and the air of sincerity and profound interest which pervaded the meeting spoke volumes for the determination of the members to solve the important questions presented to them.

AWARD OF PREMIUMS, ANNUAL MEETING, 1905.

COLLECTION OF GRAPES.

Exhibitor.	Premium.	Amount.
Gust Johnson, Excelsior	....First	.....\$5.00
A. BRACKETT, Judge.		

FLOWERS.

Article and Exhibitor.	Premium.	Amount.
Plants, E. Nagel & Son, Minneapolis.....	....First	.....\$5.00
Table bouquet, E. Nagel & Son, Minneapolis .....	....First	.....2.00
A. BRACKETT, Judge.		

COLLECTIONS OF APPLES.

Exhibitor.	Premium.	Amount.
J. A. Howard, Hammond	....First	.....\$6.00
Jewell Nursery Co., Lake City	....Second	....4.00
Frank Yahnke, Winona	....Third	.....2.00
CHARLES F. GARDNER, Judge.		

APPLES KEPT IN COLD STORAGE.

Varieties.	Exhibitor.	Premium.	Amount.
Yellow Transparent	P. H. Perry, Excelsior	....First	......50
Duchess .....	"	....First	......50
Brett .....	"	....First	......50
Okabena .....	"	....Second	......25
Hibernal .....	"	....First	......50
Longfield .....	"	....First	......50
Patten's Greening .....	"	....First	......50
Northwestern Greening ....	"	....First	......50
Wolf River .....	"	....First	......50
University .....	"	....First	......50
Gideon .....	"	....First	......50
McMahon White .....	"	....Second	......25
Scott's Winter .....	"	....Second	......25
Wealthy	Jewell Nursery Co., Lake City	....First	......50
Zuzoff Winter .....	"	....First	......50
Estelline .....	"	....First	......50
Malinda ...	"	....Second	......25
Jewell's Winter.....	"	....First	......50
Haas	Frank Yahnke, Winona	....Second	......25
St. Lawrence .....	"	....Second	......25
Okabena .....	"	....First	......50
Pewaukee .....	"	....Second	......25
University	John Wicklund, Kandiyohi	....Second	......25

AWARD OF PREMIUMS, ANNUAL MEETING, 1905.

9

McMahon	Gust Johnson, Excelsior	First	.50
Repka	"	First	.50
Wealthy	"	Second	.25
Peter	"	Second	.25
Gilbert	W. L. Parker, Farmington	First	.50
Charlamof	"	Second	.25
Kaump	"	First	.50
Utter	"	First	.50
Brett	"	Second	.25
Gideon	H. F. Busse, Minneapolis	Second	.25
Charlamof	Thos. Redpath, Wayzata	First	.50
Borovinka	"	First	.50
Longfield	"	Second	.25
Peerless	"	Second	.25
Repka	"	Second	.25
Grundy	H. H. Pond, Minneapolis	First	.50
Anisim	"	First	.50
Patten's Greening	"	Second	.25
Peerless	"	First	.50
Anis	J. A. Howard, Hammond	First	.50
Anisim	"	Second	.25
Antonovka	"	First	.50
Borovinka	"	Second	.25
Ben Davis	"	First	.50
Duchess	"	Second	.25
Golden Russet	"	First	.50
Gilbert	"	Second	.25
Hibernal	"	Second	.25
Haas	"	First	.50
Jewell's Winter	"	Second	.25
Judson	"	First	.50
Kaump	"	Second	.25
Malinda	"	First	.50
Newell's Winter	"	First	.50
Northwestern Greening	"	Second	.25
Rollin's Prolific	"	First	.50
Pewaukee	"	First	.50
St. Lawrence	"	First	.50
Utter	"	Second	.25
Wolf River	"	Second	.25
Walbridge	"	First	.50
Yahnke	"	First	.50
Scott's Winter	"	First	.50
Peter	"	First	.50
Grundy	"	Second	.25
Plumb Cider	"	First	.50
Christmas	"	First	.50
Estelline	"	Second	.25
Iowa Beauty	"	First	.50
White Pigeon	"	First	.50

GEO. W. STRAND, Judge.

APPLES NOT KEPT IN COLD STORAGE.

Varieties.	Exhibitor.	Premium.	Amount.
Peerless	C. W. Merritt, Winona	First	.50
Northwestern Greening	"	Second	.25
Brett	P. H. Perry, Excelsior	First	.50
Longfield	"	First	.50
Peter	"	First	.50
Wolf River	"	Second	.25
University	"	Second	.25
Gideon	"	First	.50
Excelsior	"	First	.50
McMahon White	"	Second	.25
Virginia	"	First	.50
Shield's	"	Second	.25
Faribault	"	Second	.25
Minnesota	"	First	.50
Wealthy	S. R. Spates, Wayzata	Second	.25
Peter	"	Second	.25
Hibernal	"	First	.50
Okabena	"	Second	.25
Repka	"	Second	.25
Golden Russet	Frank Yahnke, Winona	Second	.25
Plumb Cider	"	First	.50
Yahnke	"	First	.50
Northwestern Greening	"	First	.50
Wolf River	"	First	.50
Patten's Greening	Nils Anderson, Lake City	First	.50
Utter	"	Second	.25
Haas	"	First	.50

Fameuse	C. W. Merritt, Winona	.... Second	.... .25
Longfield	H. W. Shuman, Excelsior	.... Second	.... .25
Ben Davis .....	"	.... First	.... .50
Jewell's Winter .....	"	.... First	.... .50
Anisim .....	"	.... First	.... .50
Utter .....	"	.... First	.... .50
Malinda	Seth H. Kenney, Waterville	.... First	.... .50
Walbridge .....	"	.... First	.... .50
Pewaukee	L. D. Mills, Lake Crystal	.... First	.... .50
Patten's Greening	C. W. Spickerman, Excelsior	.... Second	.... .25
Anisim .....	"	.... Second	.... .25
Lyman's Prolific .....	"	.... First	.... .50
Hibernal .....	"	.... Second	.... .25
Wealthy	Preston McCulley, Maple Plain	.... First	.... .50
Walbridge	G. A. Anderson, Renville	.... Second	.... .25
Lyman's Prolific	H. H. S. Rowell, Minneapolis	.... Second	.... .25
Orange	D. T. Wheaton, Morris	.... Second	.... .25
Ben Davis	H. H. Pond, Minneapolis	.... Second	.... .25
Faribault .....	"	.... First	.... .50
Repka Malenka .....	"	.... First	.... .50
Brett	W. L. Parker, Farmington	.... Second	.... .25
Scott's Winter .....	"	.... Second	.... .25
Kaump .....	"	.... First	.... .50
Newell's Winter .....	"	.... Second	.... .25
Iowa Beauty .....	"	.... First	.... .50
Hyslop .....	"	.... Second	.... .25
Peerless	Thos. Redpath, Wayzata	.... Second	.... .25
Okabena .....	"	.... First	.... .50
Pride of Minneapolis .....	"	.... Second	.... .25
Hyslop	J. A. Howard, Hammond	.... First	.... .50
Jewell's Winter .....	"	.... Second	.... .25
Judson .....	"	.... First	.... .50
Kaump .....	"	.... Second	.... .25
Meador's Winter .....	"	.... First	.... .50
Malinda .....	"	.... Second	.... .25
McMahon .....	"	.... First	.... .50
Newell's Winter .....	"	.... First	.... .50
Rollin's Prolific .....	"	.... First	.... .50
Yahnke .....	"	.... Second	.... .25
Scott's Winter .....	"	.... First	.... .50
Pickett's .....	"	.... First	.... .50
Montreal Beauty .....	"	.... First	.... .50
Shield's .....	"	.... First	.... .50
Tonka .....	"	.... First	.... .50
Minnesota .....	"	.... Second	.... .25
White Pigeon .....	"	.... First	.... .50
Gilbert .....	"	.... First	.... .50
University	Louis King, Excelsior	.... First	.... .50
Gen. Grant	J. A. Howard, Hammond	.... First	.... .50
Brett No. 1 .....	"	.... Second	.... .25
Dartt .....	"	.... First	.... .50
Grundy .....	"	.... First	.... .50
Golden Russett .....	"	.... First	.... .50
Orange .....	"	.... First	.... .50
Pride of Minneapolis .....	"	.... First	.... .50
Gideon .....	"	.... Second	.... .25
Fameuse	W. J. Tingley, Withrow	.... First	.... .50

JNO. P. ANDREWS, Judge.

PECKS OF APPLES.

Varieties.	Exhibitor.	Premium.	Amount.
Patten's Greening	S. R. Spates, Wayzata	.... First	.... \$3.00
Northwestern Greening	Frank Yahnke, Winona	.... Second	.... 2.00
Wealthy	H. W. Shuman, Excelsior	.... Second	.... 2.00
Northwestern Greening	P. H. Perry, Excelsior	.... First	.... 3.00
Wealthy	Preston McCulley, Maple Plain	.... First	.... 3.00
Patten's Greening	H. F. Busse, Minneapolis	.... Second	.... 2.00

THOS. E. CASHMAN, Judge.

EARLY WINTER SEEDLING APPLES.

Varieties.	Exhibitor.	Premium.	Amount.
Evelyn	A. B. Lyman, Excelsior	.... 91 per cent.	.... \$4.68
No. 90 .....	"	.... 55 per cent.	.... 2.84
No. 36 .....	"	.... 75 per cent.	.... 3.85
Long John	S. A. Alling, Homer	.... 65 per cent.	.... 3.35
Pond's Prolific	H. H. Pond, Minneapolis	.... 60 per cent.	.... 3.09
20 A	T. E. Perkins, Red Wing	.... 90 per cent.	.... 4.62
No. 1	J. A. Howard, Hammond	.... 90 per cent.	.... 4.62
No. 3	A. J. Philips, West Salem, Wis.	.... 92 per cent.	.... 4.73
Gem	A. D. Brown, Baraboo, Wis.	.... 80 per cent.	.... 4.11
No. 4	A. J. Philips, West Salem, Wis.	.... 80 per cent.	.... 4.11

N. E. HANSEN, Judge.

Tuttle's Winter, originated by H. B. Tuttle, Tomah, Wis.

LATE WINTER SEEDLING APPLES.

Varieties.	Exhibitor	Premium.	Amount.
Perfect	A. B. Lyman, Excelsior	....89 per cent	\$4.80
Burt .....	"	....75 per cent.	4.15
No. 21 .....	"	....60 per cent.	3.35
Evelyn .....	"	....89 per cent.	4.90
No. 4.....	G. A. Anderson, Renville	....50 per cent.	2.80
No. 72	H. H. Pond, Minneapolis	.. .80 per cent.	4.45
No. 1 A	T. E. Perkins, Red Wing	....92 per cent.	5.16
No. 108 .....	"	....90 per cent.	4.95
No. 32 .....	"	....90 per cent.	4.95
Shook .....	"	....65 per cent.	3.65
	A. J. Phillips, West Salem, Wis	....70 per cent.	3.80
	J. S. Decker, Austin	....85 per cent.	4.75
	Mrs. T. McCarthy, Elkton, S. D	....70 per cent.	3.80
	H. B. Tuttle, Tomah, Wis.	... 80 per cent.	4.45
	N. E. HANSEN, Judge.		

PRESIDENT'S ANNUAL ADDRESS.

CLARENCE WEDGE, ALBERT LEA.

Fellow Horticulturists: Another year has rolled around—winter with its plans and preparations, the hopes and enticements of spring, summer's burden and heat, and autumn's harvest home, have each again been ours. And this good December day, gathered within walls dedicated to the service of the Great Being, whose laws we study, we are again brought together to begin a new horticultural year in such a way as shall best fit us to meet its duties and responsibilities. Whatever may have been the peculiar trial or adversity that some of us may have been called upon to meet, we shall have to agree that in the main the year has been one of great prosperity and real advance in almost every department of art.

It is evident that we of the north are rapidly passing through what might be termed the second stage of our horticultural development. The first, or pioneer, period may be said to have ended fifteen years ago, leaving us some small material for foundation and a vast amount of experiment. The work of this second period is to winnow out the chaff and find the real substantial kernel, to bring the practical out of the theoretical, to bring into real faith what before had been a hope—in short, to put the business of horticulture on a sound, practical, money making basis. That much of this work has been accomplished is amply attested by the remarkable shipments from the orchards of southern Minnesota during the past few seasons, one town alone, Spring Valley, in Fillmore county, shipping fifty-four car loads of apples, 170 bbls. to car—8,500 barrels, during the season of 1904, and the quantity and quality of the fruit now grown in that section of Minnesota is attracting apple buyers from long distances. Having mentioned the progress of orcharding, the most backward of the fruit industries in any newly settled section, it is scarcely necessary to say anything of the small fruits, which long since obtained a recognized standing in our state.

Having therefore been placed on the present favorable and solid basis by the labors of almost two generations, aided and encouraged by thirty-eight annual conferences of this horticultural society, in what direction shall we now turn our efforts to accomplish something worthy of our existence, and of the confidence reposed in us by the state of Minnesota? However much we may be inclined to congratulate ourselves upon what we have done, if we look about us and compare our products with those of the older sections of our country we shall be obliged to acknowledge in all candor that there yet remains very much to be desired. However useful the fruits

that we already grow, the list is in many respects defective and at the best exceedingly short. An entirely satisfactory winter apple is yet to be found. Our plums are beautiful and of high quality, but the California plums still hold our markets. Grapes have dwindled to an inappreciable quantity, and we have not as yet dared to recommend a cherry. The varieties of the eastern and western states have been weighed in our balances and found wanting, and it is almost literally true that not one of them has proved of practical value in the north. The eastern continent, especially Russia, has been ransacked from one end to the other, and everything possible been made to do duty for us. But if we except the Duchess apple, the results of all our experiments with foreign varieties will not make a respectable showing compared with the varieties that have been originated with us in the short period since the settlement of our own section. And so, judging the future by the past and remembering that such has been the horticultural history of all newly settled regions, it would seem that we might make our watchword for future progress the words lately addressed to us by that astute and successful horticulturist, Luther Burbank, of California: "Minnesota, will in time, by growing *seedling* fruits have as good plums, apples and berries as are now to be found in any other state, and you have, of course, *just the climate for testing*. It can not be done elsewhere." Mark the two great points made by Mr. Burbank. By growing seedlings, and by growing them right here. It is plain that we can grow them, for we already have in different individual varieties all the good qualities so much desired. What we need is a rearrangement of qualities that will place them in one individual, and if we find ourselves lacking a quality we can introduce it into the blood of such as we have by bringing in an out-cross of a foreign variety strongly impregnated with this quality. But, "It can not be done elsewhere." The germ of the new fruits that we desire must be so modified by our own air, soil and sunshine as to come into the world, "to the manor born." Moreover it goes without saying that we should breed from the best and the best adapted varieties, using our present vantage ground instead of going back to the uncertainties of the past. Years ago, when I first became interested in apple growing, it was a matter of surprise and mystery to me that out of thousands and tens of thousands of seedlings grown by the first settlers in our state so few, indeed scarcely any, proved worthy of propagation. The reason has since become clear: they were planting seeds of alien varieties that had no point of adaptation to our climate, having

been grown and selected for many generations for their adaptation to entirely different climates. This was clearly proved when we began to grow seedlings from Duchess, Wealthy and Malinda apples produced in our soil, many of which are now fruiting in various sections of our state and giving promise of great value.

Confronted, therefore, as we are, with the great need and the only method by which we can fill that need, how shall we go about the work? Our society has already taken advanced ground in offering inducements in the way of fine premiums for seedling fruits. I think no other society has been as liberal in this matter. Still as we think how the work has been carried on thus far, we shall have to agree that premiums have done little to incite to effort in those who have done the most and best for us. It has been a labor of love, carried on by individuals with small hope of reward except such as came to them in the feeling that they were doing something for the common good, something that generations yet unborn would enjoy and remember with gratitude. It has been done by individual work rather than by those connected with any state institution or enjoying a paid salary, and I have no doubt that the progress made in the next fifty years will be largely if not entirely made by similar efforts. Is it not possible, therefore, that while we as a society are encouraging the production of seedlings that we as individuals are neglecting what might be properly considered a duty incumbent upon such as have received almost our all from such work by those who have preceded us? Ought we not at this time, and at this very meeting, to inaugurate a crusade for more and better seed planting—a crusade to be entered upon heartily and unselfishly by the individual membership? It is not necessary that seed be planted in such quantity by each member as was planted by some of our predecessors among the pioneers. A small quantity of choice, carefully selected seed, planted by many hands and looked after by many interested eyes, will be more likely to speed the day of better varieties.

It seems to me that each one of us should choose the particular fruit or flower that holds our greatest interest, and selecting each year a few seeds of the very best of that variety, plant them in such ground, large or small, as may be available to us. After we have grown the seedlings one year, if our grounds are limited, a portion might be distributed to those about us who would be willing to care for them, and thus, perhaps, awaken in others an interest in the development we are seeking—never failing to keep in mind that the important point is in the character of the seed sown.

And now I have to propose to you as a means of clinching the matter that we form an "Inner Circle" of the members of the society who will pledge each other to make the planting of a few good seeds of fruit or flowering shrub a part of the regular duty of each year, and in token of this pledge that we wear at our meetings this button which has been prepared to distribute for this purpose. I am not proposing a new organization or any additional machinery for the society to keep running; I am only wishing to encourage an enthusiasm and fraternity of feeling for the great object which we so much desire to see accomplished.

While this should be undertaken almost as a labor of love, for the honor of our society and the cause of northern horticulture, I doubt not that it would seem altogether proper for the society to offer some special premiums for fruits that might be originated within this circle during the next few years. I am also of the opinion that those interested in the same class of fruit should get together and council and share each other's advice and experience.

It is with considerable diffidence that I concluded to bring this matter before you, as I know that the visions of an enthusiast are likely to be highly colored and frequently impractical, and I shall only hope that you will give the proposition a fair consideration.

I believe that these meetings of ours are not only becoming more valuable year by year, but that their great usefulness is becoming better appreciated. Let us enter upon the duties and pleasures of this occasion with a due sense of its great opportunity for good. We trust that the usual harmonious spirit, which has so generally prevailed may pervade this meeting, and that the information, courage and enthusiasm gathered here may prove an abiding inspiration for the months that lie before us.

REPORT OF COMMITTEE ON PRESIDENTS'S ADDRESS

DEWAIN COOK, CHAIRMAN.

Your committee on president's address would respectfully commend the address to the society, and more especially that part relating to the planting of choice seeds of fruits and flowers, and to this end we would recommend that this society authorize the executive board to appoint some person or persons to collect seeds and grow seedlings from our best varieties of apples and plums, and perhaps some other fruits, for distribution to parties in various parts of the state who will grow them to fruiting age, believing that money can be better expended by the society in this direction than

by offering all in premiums.—Dewain Cook, W. L. Taylor, committee.

Mr. Cook moved the adoption of the report.

There being no discussion offered upon the report, the motion was put to a vote and the report of the committee was unanimously adopted.

The Chairman: Now as to the ways and means of carrying this matter out, we would like to have some ideas on that point. Are there any suggestions you wish to offer? Will you state, Mr. Cook, just what you understand the idea of President Wedge to be, just what he recommended?

Mr. Cook: President Wedge suggested that premiums be offered to members that produced superior fruit and flowers, and it was recommended that these premiums be offered for the encouragement of people in various parts of the state, but the committee thought the executive committee would better understand what to do with this matter, and so we reported no further.

Mr. Underwood: At the meeting of the executive board on Monday evening this question was considered, and there was a resolution passed by the board that is very similar to the plan proposed by the president in his address and referred to by the committee. I do not know where the report of this board meeting will come in, or whether it will come in Mr. Elliot's or Mr. Latham's report, but it seems to me there is nothing special to do except to adopt the report of this committee and refer this matter to the executive board to carry out the provisions that are indicated in the president's address. I do not know that we could intelligently take it up at this session and work it out. I believe it would be better to leave it as suggested by the report of the committee on president's address.

ANNUAL REPORT, EXECUTIVE BOARD, 1905.

WYMAN ELLIOT, CHAIRMAN.

The executive board has met only three times during the year, and our expense account in connection with these meetings has not exceeded \$20. We made application to the state legislature at its last session for an additional appropriation of \$1,000 and an increase of 1,000 in the issue of our reports. The increased printing of the reports was allowed as requested, and we were granted an increase of \$500 in our annual appropriation. It is not an easy thing to get an appropriation from our legislature although it may have real merit, as in this case.

As our secretary's annual report covers practically all the work the executive board has done the past year, there is little need to make an extensive report. The board has decided to urge greater exertion on the part of the seedling committee in ferreting out more of the worthy seedling apples over the state and to encourage the growing of seedlings, and recommend that the society appro-

priate \$500 to be awarded as premiums for the best seedling apples at the end of a certain limited time, the conditions pertaining to this award to be determined by the board.

A committee of two members has checked up the books and vouchers of the secretary and found them correct and that the finances of the society are in good condition.

SECRETARY'S ANNUAL REPORT FOR 1905.

A. W. LATHAM, SEC'Y.

I shall try to give you in this report only a brief synopsis of the affairs of the society as they pertain to the office of the secretary, leaving the many things that might be said about the continuous horticultural development of the state to the other officers, superintendents of trial stations and other members of the society, who will in their reports and papers to be presented at this meeting very fully cover the field.

This year has been as usual a prosperous one for the society in every respect, I believe. There has been some increase in the membership roll, both life and annual: there has been an increase in the number of volumes of reports printed; an increase in the annual appropriation from the state; an increase in the number of trial stations; an opening up of new fields in which experimentation is being done; and an increased interest in seedling growing, a most important part of the work of this organization, as a result in part of the special premiums that have been offered.

The annual membership roll at the last meeting was reported at 1664. The annual roll for 1905 stands now at 1818, an increase of 154 in that roll. To the life membership roll there have been added the past year twenty-three names, of which number one is an honorary member created at the last annual meeting. Mr. Forest Henry, of Dover: the rest being paid members, the names and addresses of these being as follows:

Wm. Peet, Boston Block, Minneapolis; J. L. Teigland, Minneota; H. G. Westman, Sandstone; Thos. J. Lien, Delavan; Frank J. Pracna, Minneapolis; Asa G. Briggs, St. Paul; L. Johannesohn, Beltrami; Hans Stensrud, Watson; I. E. Lund, Hopkins; Geo. A. Peterson, Canby; Edward Yanish, St. Paul; Wm. Cline, Bertha; J. C. White, Mabel; Nels Engman, Mayer; Richard McComb, Brandon, Man.; W. W. Moorhead, Miles City, Mont.; Louis Larson, Minnetonka; U. G. Herrick, Minneapolis; John Eklof, Cokato; Herman Hermanson, Hopkins; F. F. Norwood, Balaton; J. H. Swanson, St. James.

There have been three deaths of life members recorded during the past society year: that of Prof. J. L. Budd, late of Ames, Iowa, who died December 21, 1904; the name of Rudolph Knapheide, late of St. Paul, is also to be added to this list, although I have not been able to ascertain the exact date of his decease. Recent knowledge has also come to me of the death of Mr. A. G. Tuttle, the veteran nurseryman of Baraboo, Wisconsin, well known as champion of and experimenter with the Russian varieties of apples, whose death occurred during the past year. I hope to secure some particulars of his decease more than I am able to present at this time. Allowing for the deceased life members, there is a net increase of life members for this year of twenty, making the total present life membership 155 and the total list of members, not including two or three short time honorary members, 1973. I should speak here of the death of Mr. S. D. Hillman, announced in a local paper as occurring November 27th after an illness of only four days' duration.. That Mr. Hillman's name was not on the honorary life list of the society was simply an oversight, I am sure, as his services to the society as secretary for five years, commencing with the year 1885, were highly appreciated, to which Mr. Wyman Elliot can testify, as during four of these years he was president. A suitable notice of the death of Mr. Hillman will appear in an early number of our monthly.

The usual methods of securing new members and distributing the literature of the society have prevailed this past year with no material change. Three hundred and sixty-one memberships have been sent in to the office from the farmers' institutes, of which Mr. Frank Yahnke has favored us with 108, the lecturer on horticulture with the other institute, Mr. Wm. A. Buggs, of Stockton, sending 253. In connection with securing these members, Prof. Green's book, "Amateur Fruit Growing," has been given to the new members as a premium by the lecturer. A large number of these and other horticultural books has been sent out also to other members of the society who have secured new members, in all, including the institutes, 497 volumes. Thirty thousand of the folders of the society have been printed, the little folder which contains the fruit list, etc., with which all of you are familiar. These have been distributed, perhaps half of them, through the farmers' institutes, a large number of them from this office directly, and a very considerable number by the nurserymen of the state, who give them out in their correspondence and through the hands of their agents. This is good literature for the horticultural society to send out, and the nurserymen should be encouraged to assist still further in this direction.

Two new experiment stations have been established this year, one at Glencoe, with Capt. A. H. Reed as superintendent, and the other near Duluth, at Wrenshall, Mr. F. B. McLeran being in charge. The one near Duluth opens up a new region for experimentation, and we expect especially interesting reports from its superintendent.

This year an advance has been made in the preparation of blank forms for the use of the vice-presidents in securing information in their respective districts. A quantity of these were sent to each vice-president for distribution, and their value may be judged somewhat from any apparent changes in the reports of these officers. An experiment of special interest to apple growers in the state was inaugurated this year by sending out to each of the trial stations a dozen small apple trees of a number of varieties grafted in the crown on *Pyrus Baccata* roots. Instructions were sent to the superintendents of these stations so that there might be uniformity in the treatment of these trees during their development, and suitable blanks to make annual reports about them. We are in hopes in time by these experiments to secure definite information as to the value of this method of growing apple trees in the northwest.

A good many additions have been made to the library this year, but no special effort has been made in that direction, as the library cases are already full, and at least one-half as many books as are in the office are stored outside for safe keeping until the society secures accommodations that will permit their placing on the shelves. The most important books, however, are in the library, and no inconvenience has resulted from this arrangement. About sixty volumes will cover the increase this year. Most of them are reports from other societies, but several are books by well known horticultural authors, which have been purchased or have come to us for review. An improvement of special value which will be more and more appreciated is the preparation of card indexes; one of the books of the library, topically arranged, which is as yet only partially completed; one of the horticultural bulletins from the state experiment stations of the country, nearly a full file of which is to be found in the office. These are arranged in the card index alphabetically according to subjects and may be consulted with great convenience. They include nearly every subject of interest to the horticulturist. A third card index is being prepared of the various passing newspaper clippings pertaining to the work of the society, and published in our annual reports. We have been some years now saving newspaper clippings pertaining to the work of the society, and these have year by year been put into scrap book form chronologically arranged and will be found interesting for review.

The society is at present offering two prizes for new fruits, the one for \$1,000 which has now been standing for some years, and the other promulgated last year for \$100, offered by Mr. Chas. M. Loring, of Minneapolis, for a plum seedling. Five competitors have been this year added to the list of those who are seeking to secure the \$1,000 apple seedling prize, but so far only one application has appeared for the plum seedling prize, Mr. C. A. Sargent, of Red Wing, who submitted a sample of fruit in September last. The executive board to whom the plum seedling award was referred, after much consideration agreed upon the description of the fruit which should be entitled to receive the premium. This was published in the Secretary's Corner of the July, 1905, number of our monthly and will be found on page 280 of our annual report for 1905.

Pursuant to instructions at the last annual meeting the executive board took the necessary steps to secure legislative recognition for the growing needs of the society in increasing the number of its printed volumes and also the annual appropriation from the state. In approaching this subject it was found that the adoption of a new code of laws, which had been made and presented to the legislature, would result in cutting off our entire appropriation and leave us also without money provided for the printing of our reports, so that it was necessary to introduce bills providing for the whole of the printing and also for the whole society appropriation needed. The situation was somewhat complicated also from the fact that the society had expressed a wish that we should assist in securing an appropriation for the State Forestry Association. After carefully canvassing the situation it was apparent that we were more likely to secure a larger appropriation for the society, part of which might be used for the Forestry Association, than to secure an appropriation directly for the Forestry Association, and so the legislature was asked for \$3,000 for the Horticultural Society annually, the intention being to devote \$500 of this annually to the use of the Forestry Association. The appropriation as finally decided upon by the appropriation committee, and as it passed the legislature in the omnibus appropriation bill, allowed only the \$2,500 asked for by the Horticultural Society. The executive board has since authorized the expenditure of \$25 a month, or as much as may be needed, to meet the expenses of the Forestry Association. We asked the legislature for an increase of printing to five thousand volumes, and this request was granted, and an appropriation of \$3,000 made to defray the expense. Both of these appropriations were made to run indefinitely, so that if things continue as they are it will not be necessary to go to the legislature again until additional printing or help in other directions is needed.

We are under obligations to hundreds of members for assistance in obtaining this appropriation and especially to the chairman of the executive board, Mr. Wyman Elliot, and Prof. S. B. Green, who were there in attendance with the secretary and gave personal attention to every phase of the effort to secure this legislation. As far as we know there was no opposition in the legislature to either of these appropriations. It is a splendid record to say that during the past fifteen years, on the several occasions it has been necessary to ask the legislature for money, that no member of the legislature has knowingly voted in opposition to any of the measures presented by the society for this purpose. The increase in the number of printed reports will permit a material increase in the membership. As to what limits this increase will reach, it will depend in large part on the interest of the membership therein.

The Webb Fund has been drawn on this year to the extent of \$27.50, leaving \$72.50 in the hands of the secretary. This fund, it will be remembered, was practically contributed by Mr. E. A. Webb, of the "Farmer," to be used in suitably decorating the horticultural class room at the experiment station with portraits of eminent horticulturists, etc. The Gideon Memorial Fund, including interest in the savings bank, has reached the net amount of \$253.05. It was decided at the meeting of the board in June to make an appropriation to bring this amount up to \$500 and deposit this sum with the Board of Regents of the State University for the purposes originally designated: That is, the interest of this fund to be used as prizes to students in the Horticultural Department of the Agricultural School.

One local horticultural society has been added to the list of auxiliary horticultural societies in our state, that at Willmar, making the aggregate number six. Every encouragement is offered in this office to localities where a desire is expressed to create these local organizations, and we hope for a material increase in the number, although the difficulty of maintaining interest in them for any long period, making them active and useful to their members and the locality where they are situated, is fully apparent to those who have had experience in this direction. Of these societies this year the Southern Minnesota society has thirty-three members, the Constance horticultural club thirty-three members, the McLeod county horticultural society eleven members, the Willmar society seventeen members, and the Red River Valley society thirty-five members. The North Dakota State Horticultural Society was on our membership roll as an auxiliary with one hundred thirty-five members in 1904, and the same offer was extended to them this year, and it was understood that they would continue on the roll. As far as I have

been able to learn this society is practically out of existence.

This report is already altogether too long, and I will close here with the usual financial statement, which I hope may prove satisfactory to our members.

FINANCIAL STATEMENT:

Receipts of Secretary's Office:

Balance, 1904	\$ 115.39
Advertisements	165.50
Life membership fees.....	183.00
Annual fees, 1905	1,603.00
Annual fees, 1906	198.00
Cuts sold	4.00
Books sold	41.79
Western Passenger Association, refund.....	11.00
North Dakota Hort. Society.....	56.00
Sundries	9.71
Balance due secretary	8.21
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	\$2,395.60

Expenditures of Secretary's Office:

Postage	\$ 434.51
Express	21.36
Printing	293.95
Telephone	32.00
Gas.....	2.98
Assistance in office	261.25
Library	54.65
Premium books.....	200.45
Premium plants	88.53
Rent of office	240.00
Reporting annual meeting, 1904.....	115.68
Expenses annual meeting, 1904.....	261.69
Expenses summer meeting, 1905.....	9.90
Expenses annual meeting, 1905.....	28.70
Expenses executive board.....	18.58
Expenses delegates	90.02
Insurance	8.00
Account Webb fund.....	27.50
Discounts on memberships.....	141.00
Assistant librarian.....	10.00
Expenses seedling committee.....	3.40
Sundries	29.45
American Breeders Association.....	20.00
American Pom. Society.....	2.00
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	\$2,395.60

On deposit in Hennepin Co. Savings Bank Dec. 1, 1904	\$1,260.09
Interest on deposit to date.....	38.22
Total	1,298.31

Balance in society's treasury Dec. 4, 1905.....	1,855.17
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	\$3,153.48
Balance due secretary	8.21
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Total society funds on hand.....	\$3,145.27
Gideon memorial fund on deposit in Hennepin County Savings Bank Dec. 1. 1904	240.72
Interest on same to date.....	7.33
Deposited June 10, 1905.....	5.00
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Total	\$ 253.05

TREASURER'S ANNUAL REPORT, 1905.

A. B. LYMAN, TREASURER

Receipts

1904.	
Dec. 5. Balance on hand	\$1,194.37
Dec. 12. A. W. Latham, Secy., receipts of secretary's office from 6-23-04 to 12-5-04.....	\$ 574.20
1905.	
Mar. 8. State treasurer, semi-annual allowance	1,000.00
June 21. A. W. Latham, Secy., receipts of secretary's office from 12-5-04 to 6-20-05.....	1,648.96
Oct. 1. State treasurer, semi-annual allowance	1,250.00
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	\$5,667.53

Disbursements.

1904.	
Dec. 12. Order 129, Clarence Wedge, presi- dent's salary, 1904.....	\$ 25.00
Dec. 12. Order No. 130, A. B. Lyman, treasurer's salary, 1904.....	25.00
Dec. 12. Order No. 131, A. W. Latham, Secy., Exp. secretary's office from 6-23-04 to 12-5-04.....	574.20
1905.	
April 1. Order No. 134, A. W. Latham, secy. salary 1st qr. 1905.....	300.00
June 1. Order No. 135, A. W. Latham, secy. salary 2nd qr., 1905.....	300.00
June 21. Order No. 136, A. W. Latham, exp. secretary's office from 12-5-04 to 6-20-05.....	1,648.96
June 21. Order No. 137, premiums annual meeting, 1904.....	198.20
Sept. 1. Order No. 138, A. W. Latham, secy., salary 3rd qr., 1905.....	300.00
Dec. 1. Order No. 139, A. W. Latham, secy., salary 4th qr. 1905.....	300.00

Dec. 5.	Order No. 140, A. B. Lyman, premiums, summer meeting, 1905	141.00
Dec. 5.	Balance on hand.....	1,855.17
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		\$5,667.53

ANNUAL MEETING, 1905, MINNESOTA FORESTRY ASSOCIATION.

MRS. LYDIA PHILLIPS WILLIAMS, SECRETARY.

The annual meeting of the State Forestry Association, which convened in Minneapolis, Tuesday, December 7th, has been declared by many of the friends of forestry to be one of the best meetings ever held in the history of the organization.

A live issue—maintaining the Minnesota Forestry Reserve under the Morris Act—led to a discussion that forced home the truth that upon the forestry policy of Minnesota largely depends the future prosperity of the state.

After a few words of greeting from President Loring, Mrs. Lydia Phillips Williams gave a report of the National Forest Congress, held at Washington, stating that the meeting was epoch making, since the great commercial and industrial interests of the country were represented by delegates advocating conservative forestry. Following the reports of the congress the danger that threatens the Forest Reserve, through the activity of certain selfish local interests that are laboring to secure the repeal of the Morris Act, was explained and illustrated by cartoons.

Mrs. J. B. Hudson, the next speaker, told of her visit to the reserve and made some telling points in favor of maintaining the reserve. She declared the soil better adapted to forest culture than agriculture and that Cass Lake's one show garden had to be fertilized, artificially irrigated and put under the care of an experienced German gardener before tomatoes could be raised or any satisfactory results obtained. The speaker refuted the statement made by enemies of the Morris Act that "blow-downs" on the reserve have seriously or permanently injured the prospects of forest reproduction, and against the claim that white pine will not reproduce itself stated that the ground on the cut-overs was well sprinkled with seedlings, and exhibited several specimens of white pine from the reserve.

Mr. Geo. H. Maxwell, chairman of the National Irrigation Association, made the thrilling and convincing address of the afternoon, showing that forestry, irrigation and drainage must be considered as factors of one problem if the best interests of industrial, commercial and agricultural development are served, and said in part:

"If you keep on chopping down your trees, the time is coming when the now magnificent state of Minnesota will be a barren desert, despoiled and void of vegetation, over which hungry jackals and frantic hyenas will prowl. Much better had you united your voices in a prayer to the United States congress to build an automobile road from Minneapolis to Cass Lake than to insist upon your request that this northern section be drained, for it would be money in your pockets to do so.

"The total area in Minnesota devoted to forest reserves should be ten times as large as Cass Lake Reserve, but should be scattered in different parts of the state and should be regarded and treated as forest plantations rather than forest reserves. There ought to be 20,000,000 acres of forest plantations in Minnesota from which, when the trees have matured, an annual forest crop could be harvested so as to maintain forever the lumber industry of the state. If they go ahead in the wrong way and get the water and timber both off the land in northern Minnesota it is not at all impossible to turn that country into an abandoned desert in ten years."

At the close of the address, Mrs. Lydia Phillips Williams offered the following resolutions:

Whereas, the resolution of the Minnesota legislature last April urging congress to open for settlement the Minnesota forest reserve at Cass Lake was passed without discussion upon its merits or previous notice, and

Whereas, the statements in said resolution are misleading and in certain particulars incorrect, and

Whereas, the resolution does not represent the voice of the majority of the people of the state, or the best interests of the state or the Indians;

Resolved, that the Minnesota Forestry Association hereby petition congress to refrain from granting the request embodied in said resolution, and respectfully urges congress to uphold said reserve—the act creating it having been a compromise measure, to which all interests were and should remain agreed.

A spirited discussion ensued in which Mr. Barnard and Mr. Ives, of Cass Lake, and Mr. Hayes, of Bemidji, being extended the privilege of the floor, participated.

At the close of the discussion Prof. S. B. Green moved the adoption of the resolution presented by Mrs. Williams, and it was passed by the association with only one dissenting vote.

Lycurgus R. Moyer, of Montevideo, read a paper on "Prairie Forestation," showing that in many places the plains of the hitherto bleak northwest are being turned into tree shaded tracts.

The Forestry Association then elected the following officers to serve for the ensuing year: President, Mr. C. M. Loring; vice-president, Mr. S. M. Owen; secretary, Mrs. Lydia Phillips Williams;

executive board, A. W. Latham, Wyman Elliot, A. K. Bush, O. C. Gregg, Prof. S. B. Green.

President Loring read a most valuable and suggestive paper on the economic value of shade trees, citing instances in which their valuation by courts of justice had been placed as high as \$400.

President Loring followed his paper with stereoptican views illustrating the beauty that trees add to the landscape and the desolate monotony of village street or country road without shade.

ANNUAL MEETING, 1905, IOWA STATE HORTICULTURAL SOCIETY.

DEWAIN COOK, JEFFERS, DELEGATE.

Tuesday morning, December 12, found your delegate at the Iowa State Capitol, in Des Moines, where a session of the Iowa State Horticultural Society was being held in the society library room. We were given a most cordial reception and made an honorary member.

In the hall adjoining the society's room there was being placed upon the table many splendid collections of apples, also a few plates of pears from southern and central districts. The apples showed that with the exception of extreme cold in winter the fruit growers of Iowa have to contend with the same adverse conditions that we have in Minnesota. While the fruit from all of their three fruit districts was fine, we noticed that the northern district had the largest display, and, we thought, the most perfect fruit.

Mr. L. A. Clemens, of Storm Lake, had a fine collection of seedling apples, one of which impressed me as being worthy of trial in Minnesota. It is a large, red striped apple and is named the Clemens.

Mr. C. G. Patten, of Charles City, exhibited some forty varieties of cross bred apples, products of the experiment station of which he is superintendent. This table of seedlings, produced so near the Minnesota line, compared favorably with adjoining tables of named varieties. It seems to us that Mr. Patten has produced much that may be of value to us who live in Minnesota.

The Iowa State Agricultural Society was also in session in one of the rooms of the capitol, and they had the best exhibition of corn upon the tables that the writer has ever seen.

The horticultural sessions were conducted in a leisurely manner, as the program was not crowded. Those who were on the program to read papers usually handed them to the secretary and then gave an extemporaneous talk along the lines of which the paper treated. There was plenty of time for discussion. The papers and discussions were mostly from a commercial standpoint and very lit-

the criticism of papers was indulged in. These Iowans appear to be a harmonious lot of fellows.

Varieties of apples were discussed but little or not at all.

Those attending this meeting did not appear to be very much interested in plums, but reports showed that the plum rot (*monilia*) could be kept in check by spraying at intervals throughout the growing season.

The discussion on spraying was of great interest, and it showed that most of the large orchardists depended entirely upon the liquid spray to keep their orchard trees in a healthy condition, but it was generally admitted that the dust spray, being so easily applied, as a worm exterminator it would be of value to those farmers who only had a small orchard and would not take the trouble to make and apply the liquid spray.

Of strawberries the Senator Dunlap was the only variety mentioned as being of special and great value, all the large fruited varieties without exception not being productive enough to be of any value to the commercial grower.

Wednesday occurred the election of officers. Here the Iowa society made a record for rapid work. Time, including presentation speeches, four and one-half minutes; sixteen officers, by ballot, one at a time. W. A. Burnap, of Clear Lake, is the new president, and Wesley Greene is secretary.

Right after the Wednesday evening session we were the guests of Secretary Wesley Greene at a banquet held in the immense dining hall of the Savery Hotel. About twenty-five colored waiters were attending to our wants, and we estimate that about three hundred persons were attending as guests. The society took this occasion to present Secretary Greene with an elegant gold watch, suitably engraved. It is pleasing to note how the Iowans delight to love and honor their secretary.

We were entertained by the Iowa people throughout the three days we were there with the greatest of courtesy, consideration and hospitality.

From what we heard at the meeting and what we saw from the car windows would judge that the average Iowa farmer is fully as backward in trying to grow his own fruit as those of southern Minnesota, at least. In southern and central Iowa the fruit is mostly raised by the commercial grower.

The delegate from Iowa to our late meeting, Mr. C. F. Gardner, made such a thorough and excellent report of our meeting and of our resources that notwithstanding the shortcomings of the Minnesota delegate the interests of the Minnesota State Horticultural Society were pretty well presented at the Iowa meeting just closed.

ANNUAL MEETING, 1905, MINNESOTA BEE-KEEPERS' ASSOCIATION.

CHAS. D. BLAKER, STA. F, MINNEAPOLIS, SEC'Y.

The Minnesota Bee-Keepers' Association held its seventeenth annual meeting in Minneapolis, December 6th and 7th. It had been decided by the executive committee not to hold a meeting this year, as the date conflicted with that of the national association. When it was learned that the date of the national had been changed a program was hurriedly arranged. It was impossible for some who had been assigned papers to make preparation on so short notice, nevertheless the meeting proved to be an interesting and helpful one. It was called to order by the president. Dr. E. K. Jacques. Invocation by Chas. D. Blaker. The minutes were read by the secretary, Mrs. W. S. Wingate.

The financial report of the executive committee was read by H. G. Acklin, chairman. Dr. Leonard made a report for the committee concerning the efforts made to secure better facilities at the state fair grounds. Wm. Russell made a report as to what the committee had done to secure the passage of a foul brood bill. It was moved that a vote of thanks be sent to R. P. Brown, W. P. Roberts, M. J. O'Laughlin and S. A. Stockwell for their efforts to secure the passage of a foul brood bill. It was voted that the executive committee continue to take such steps as it may think best toward securing a foul brood law.

The treasurer's report showed a balance on hand of \$74.83.

Mr. Russell read the report of the committee on adulteration. The Minnesota Dairy and Food Commission has analyzed since January 1st, 1905, sixty-four samples of honey, and but three samples were found illegal. It was voted that the association extend its hearty thanks to the members of the Dairy and Food Commission for the service they have rendered to the bee-keepers of Minnesota and to the people in general.

The afternoon session was opened by singing "America," with Mr. Levi Longfellow at the instrument.

Dr. Jacques, in giving the president's annual address, made a very full account of the work which had been accomplished during the year.

Scott La Mont read an article from the last "Gleanings," written by E. W. Alexander, entitled, "Amount of Honey per Colony." This led to a discussion which proved quite helpful.

Mr. Levi Longfellow, of Minneapolis, gave a very helpful address on "Marketing Honey."

Address by Rev. J. H. Kimball, of Duluth, on "Preparing Comb and Extracted Honey for the Market."

Miss Mary Moeser read a paper on "The Uses of Honey in Cooking." The executive committee was authorized to publish Miss Moeser's paper so that it might be more generally circulated.

The question box brought out considerable discussion on various subjects, among them the following:—stimulative feeding in the spring, how to keep down increase, the mixture of different kinds of extracted honey, is it advisable to use shallow frames above a 10-frame hive when working for extracted honey, etc.

The Thursday morning session opened with instrumental music by Mr. Smith, of the Metropolitan Music Co., and a song, "The King's Business," by Miss Ethel Acklin.

Mr. Russell spoke to the question, "Shall we invite the national convention to Minneapolis for 1906?" It was unanimously voted that we cordially invite the national convention to meet with us in the Twin Cities at its next annual meeting.

Prof. F. L. Washburn, State Entomologist, gave a very interesting account of his experience with a Carniolan queen and a Caucasian queen, which had been received from the Department at Washington.

Mr. J. M. Underwood, of Lake City, Supt. of Agri., Hort. and Honey Dept., Minnesota State Fair, related his early experience with bees to the amusement of all. He then spoke on the matter of the state fair exhibit, and of the possibility of securing better accommodations in the future.

Mr. Russell gave an outline of his work as foul brood inspector. His commission went into effect August 1st. Since then sixty-seven apiaries, containing 2,366 colonies, have been visited. In twenty apiaries, containing 529 colonies, disease was found in all stages. On account of the lateness of the season and the presence of robber bees, it was impossible to ascertain the exact number of diseased colonies. It was deemed best not to make a thorough investigation for fear of spreading the disease. Mr. Russell called attention to one case of a diseased apiary of forty colonies where the owner absolutely refused to have the bees treated, giving as the reason for refusal that, "they are going to be sold anyway." Some of those diseased colonies were sold. However, they were traced, and some of them destroyed, with the consent of the owner. In closing Mr. Russell expressed his appreciation of the kindness and courtesy which had been extended to him by nearly all of the bee-keepers with whom he had come in contact.

Piano solo by Miss Ethel Acklin.

Dr. F. C. Spates, of St. Paul, read a paper on "Honey as a Food and Medicine." A vote of thanks was extended to Dr. Spates for his very instructive paper.

The Thursday afternoon session was opened with a paper sent by W. K. Bates on "Summer Feeding of New Swarms."

Mr. Chas. Mondeng discussed "Adel Bees."

Mrs. H. G. Acklin read a paper on "The Educational Value of Agricultural Exhibits and How the M. B. K. A. has Aided in Securing These Opportunities for the Bee-Keepers of the State."

By special request Dr. Jacques recited a poem which he wrote some years ago giving a history of his regiment. The members of the association expressed their appreciation in a hearty vote of thanks.

Rev. J. H. Kimball moved that the members of the executive committee be elected, one for one year, one for two years, one for three years and that hereafter one be elected annually for the term of three years, and that the committee elect their own chairman. The motion was unanimously carried.

The following officers were elected for the ensuing year:

President, Dr. L. D. Leonard; 1st Vice Pres., Scott LaMont; 2nd Vice Pres., J. M. Doudna; 3rd Vice Pres., J. W. Murray; Secretary, Chas. D. Blaker; Treasurer, Mrs. W. S. Wingate; Executive Committee, H. G. Acklin, for 3 years; Rev. J. H. Kimball, for 2 years; William Russell, for 1 year.

Scott LaMont and H. G. Acklin were appointed, with the president, as delegates to the next meeting of the State Agricultural Society.

It was voted to express the thanks of the association to the Metropolitan Music Co. for the use of the instrument and for the musical assistance rendered by the company.

It was moved that the president be delegated to attend the national convention and extend the invitation of this association to the convention to meet in the Twin Cities for their next annual meeting.

Adjourned to meet at the call of the executive committee.

**ILLINOIS' STATE HORTICULTURAL SOCIETY, ANNUAL
MEETING, 1905.**

(50th Anniversary Meeting.)

ROY UNDERWOOD, LAKE CITY, DELEGATE.

The fiftieth annual meeting of the Illinois State Horticultural Society was held at Champaign, Ill., Dec. 12th to 15th, 1905, and was one of the most successful meetings of the society. There was a good attendance, and as the day sessions were held at the State University a marked feature was the large number of students present. The opening session on Tuesday evening at the Elks' Hall was largely given over to reminiscences of the prominent early members of the society, illustrated by portraits with the stereopticon.

Prof. J. C. Blair reviewed the apple crop of 1905, which was practically a failure in Illinois, only about 20 per cent of a full crop being harvested. In the discussion it developed that with those orchardists who let up on the spraying early in the season, on account of discouraging outlook, the crop was an absolute failure; on the other hand, those who kept up the spraying and care, in the face of the situation, were rewarded by very fair yield, amounting in many cases to between \$150.00 and \$300.00 per acre. One of the causes of the general failure was severe frosts during the blooming season. It, however, was shown that in the orchards that had been well taken care of and methodically sprayed the previous year the injury was not so great.

One session was largely given to the ladies. Mrs. Nora Burt Dunlap, of Savoy, the well known advocate of social science in Illinois, gave a splendid talk on the subject of vegetables and their dietetic value. Mrs. Dunlap is a brilliant and forceful speaker, and her presence is an illumination to any program. The same is true of her husband, the Hon. Henry M. Dunlap, who has long been a prominent figure, not only in Illinois politics and as a champion of the Illinois State University, but is also prominently known as one of the largest and most successful orchardists in the United States. He operates something over 1,200 acres of bearing orchards in various parts of Illinois, and upon a system of management that is very interesting. Mr. Dunlap's address in the subject of storage for fruit is along the line that is at present of particular importance to our northern orchardists. Mr. Dunlap annually stores many thousands of barrels of apples for winter market. The gist of his talk was that the older system of cold storage in which ventilation was the basis is not as successful or desirable as the more modern system of chemical refrigeration by piping. Apples should never be

exposed to circulating air as it evaporates their moisture, wrinkles the skin and makes them leathery. If this is true of the firm fleshed apples of that section, it should be doubly true as applied to our tender varieties, like the Wealthy.

A leading spirit at all the meetings was Dr. T. J. Burrill, the venerable professor of natural history in the University of Illinois. Dr. Burrill is a pioneer member of the Horticultural Society and well acquainted with the history of its development. Dr. Forbes' report on nursery inspection showed 311 nurseries in the state and seventy small fruit growers who also propagate some small plants for market. The San Jose scale is now a widespread and persistent proposition in Illinois, and scientific and successful means are being taken to keep it in check. The lime and sulphur spray has been used with the best results, and kerosene emulsion seems also to have been used successfully. However, the bitter rot and scab are claiming most attention from the Illinois orchardists, and they are minimizing the expense of preventing these evils by taking up the work in the latest and most methodical manner.

The paper by Dr. A. S. Forbes, state entomologist, brought out several interesting facts regarding the use of various spraying formulas. Paris green was first used in 1860 to fight the potato beetle. London purple was introduced in 1872, and Prof. Budd was instrumental in bringing it to the front. Not until 1878 were the arsenites used to combat the codling moth and canker worm. About a year later pyrethrum was introduced. Kerosene was first used in 1869, and whale oil soap added about five years later. Milk and kerosene was first used in 1880. Crude petroleum was tried in 1890. The lime and sulphur solution, that is now being so much used, was originally employed as a sheep dip in California. Later the sheep growers tried the same formula on their fruit trees and found it successful. Up to 1855 sulphur was the only fungicide used. Most of the fungicides have been of American origin, while the insecticides like Paris green and London purple, etc., have come from Europe. The famous Bordeaux mixture originated in France about 1882, where it was used mainly to frighten away thieves from the vineyards. The dust spray, which is having so much attention up here just now, has been discarded by the Illinois growers as being absolutely worthless. I could not find one orchardist or nurseryman who had anything good to say of it as a practical means of attacking either insect or fungous diseases.

It appears that tomato growing, both for canning and for the city markets, is one of the chief horticultural industries of Illinois,

(Cobden, Ill., is the largest tomato growing center in the world) and Prof. John W. Lloyd, of the University of Illinois, read a very interesting paper upon the subject. The tomato rust is the most formidable enemy and is combated by the use of Bordeaux mixture. Discussion brought out the fact that "Earliana" and "Imperial" are two of the most popular commercial tomatoes. "Fonderosa," altho very large, is often imperfect. On the Chicago market all tomatoes are grouped into two classes, by which they are known irrespective of the names of the varieties: the smooth, purple-red kinds are called "Acme" and are considered the best; the bright red sorts are known as "Trophy" and are considered second in quality.

Small fruits form quite as much a topic of interest as at our own meetings. L. G. Hubbard, of Urbana, said that he did not consider the root gall on raspberries any damage. The strawberry growers there have practically discarded planting machines. One large grower gets his new plantations made for 50 cents per thousand plants.

The horticultural interests in Illinois are somewhat divided, owing to the marked difference of climate between the extremities of the state. There are three active horticultural societies, representing the north, central and southern portions of the state. At the meeting of the state society, therefore, the discussion regarding varieties that is a prominent feature of the Minnesota meetings appears to be lacking, supposedly because it is a subject brought out more fully in the local societies. As a matter of fact, they do not seem to be looking for new varieties down there, as the market demand for varieties, in apples at any rate, has been pretty well fixed. There is a fairly well defined rule that the new orchard shall contain just so many Ben Davis, Willow Twig and Jonathan, with a few other leading varieties as fillers.

The banquet, which was held Thursday evening at the Beardsley Hotel, was a very happy and successful affair. There were about one hundred guests present. Your delegate was honored on this occasion by being invited to respond for the "visiting delegates."

Mr. Geo. J. Foster, of Normal, was elected president, Mr. L. R. Bryant, of Princeton, was reelected secretary, and Mr. J. W. Stanton, of Richview, reelected treasurer. There is also an executive board, consisting of the president and secretary and two members, representing each of the northern, central and southern districts. The life membership fee, formerly \$20.00, was reduced to \$5.00.

NEW PRIZES FOR SEEDLING APPLES.

A. W. LATHAM, SECRETARY.

At a special meeting of the executive board of the Minnesota State Horticultural Society, held Dec. 18 last, it was decided to offer further prizes to encourage the growing of apple seedlings in the Northwest, competition therefor to be restricted to the same territory as heretofore covered in the offers for seedling apples at the annual meeting of the society, viz.: the western half of Wisconsin, the two northern tiers of counties of Iowa, all of Minnesota, South Dakota, North Dakota and Manitoba: the prizes offered consisting of five premiums of \$100 each, one to be given in 1912, one in 1913, one in 1914, one in 1915 and one in 1916. They are offered for the best late winter seedling apple, keeping at least until March 1st under ordinary cellar conditions, grown by any one within the above described territory, and the trees bearing this fruit must have been grown from seed planted since the making of this offer, that is, planted next spring or some succeeding spring. Competition is open to any one within the above limits.

There are several other important requirements, the first being that entry for competition for this premium must be made to the secretary of the society within one year after the planting of the seed.

•Second. When the entry is made the competitor must state when and where the seed was planted and the variety of apple from which it was taken and where the apple from which the seed was taken was grown.

Third. Seedlings grown from seed taken from apples grown outside the limits described above will not be eligible for competition.

Fourth. A seedling apple having taken one of these prizes cannot be entered again for competition under this offer.

Fifth. The same person may make any number of entries and should make a separate one for each planting of seed from each variety of apple.

Members of the society may, and should if in any way possible, compete for these prizes, not alone for the satisfaction of securing them but to help forward the very important work of growing new varieties of apples adapted to the Northwest, as in this way only can we reasonably expect to secure the high grade, long keeping, hardy apples that we need. The first prize being six years off, gives time to bring into bearing most seedling trees grown from seed planted next spring, but if they prove tardy in setting fruit they must be hastened by grafting scions from them into

old bearing trees, which will almost certainly bring fruit the third year after planting. Scions could be taken from trees only one year old even and grafted into older trees, getting fruit very quickly therefrom. There was fruit shown at the late winter meeting by Mr. J. A. Howard, of Hammond, Minn., seedling apples grown from trees, the seed producing which was sown only four years ago, and this is practicable for any one. There is still opportunity for many people to secure seed this winter for next spring's planting. The seed of a single apple will answer the purpose if more cannot be had. The advisability of planting seed taken from extra fine specimens of long keeping varieties should be emphasized, as the results desired will be more likely to be secured from this kind of fruit.

An article appears following this in this number from the pen of Mr. Wyman Elliot, whose large experience in growing apple seedlings makes him competent authority on this subject, giving directions for the handling and planting of apple seeds. This should receive careful reading.

Secure some good seed and plant this spring without fail, and entry can be made at any time within a year after planting. If you haven't time to give to this thing, get a son or daughter interested in the work. The children can grow them as well as their parents, and this sort of work increases home ties.

Entry blanks and fuller detail information as to this offer can be had of Sec'y Latham upon application.

HOW TO SAVE AND PLANT APPLE SEED.

WYMAN ELLIOT, MINNEAPOLIS.

From the number of inquiries received for information from persons contemplating the saving and planting of apple seed, I think it is best to give a few simple directions for doing the work. The quality of the fruit from which the seeds are to be taken is of the greatest importance. Always choose the largest, well developed specimens of the variety selected from which to save seeds for planting, rejecting all shrivelled, undersized, immature seeds, and long keeping apples should be chosen from which to take the seed if possible. Place these seeds in a tin box, can or bottle, with four times as much damp sand as there is seed, and put away in a dark, cool place, remembering that apple seeds germinate best when they have been frozen. As soon as the ground is thawed out in spring plant the seed in well prepared soil one inch deep, packing it firmly over the seed; or if only a few seeds are to be planted sow them about March 1st in a flat box with three inches depth of soil or in

a large flower pot filled with good earth. Keep them watered and in good sunlight, and when the plants have grown four to five leaves transplant them to the open ground on some cloudy, damp evening. Keep them free from weeds, hoeing often to ensure good growth.

It is well to cover the young trees at least the first winter. About November 1, bend them over and cover with dirt four inches deep. Coarse material of some kind put on top of the dirt covering would give added protection. In the spring when the frost is out of the ground uncover the trees, and it would be advisable to spray at once with a lime, sulphur and salt wash, made of equal parts, to ensure good, healthy condition. (See State Entomologist's report for 1903, page 114 for methods of preparation and use of all kinds of insecticides and fungicides.) Spraying, both for injurious insects and fungous diseases, has become an actual necessity with every one who expects to get best results from the raising of fruits, vegetables or flowers. If the farmers, fruit growers and florists would take time to read the very practical and instructive reports prepared by the state entomologist, Prof. F. L. Washburn, they would be directly benefited by his very exhaustive researches and experiments, conducted for their especial benefit. A postal card sent to the State Experiment Station, St. Anthony Park, requesting the report will bring it by mail free of cost.

ICELESS COLD STORAGE.

HOME WAY OF KEEPING FRUIT IN CELLARS WITHOUT ICE. IMPORTANCE OF VENTILATION.

When ice storage is not feasible an unrefrigerated house, built on the same lines but with only one room, answers the purpose nearly as well. If this house is built into a side hill it is easier to regulate the temperature. One or more air spaces in the wall are essential. The temperature of this house is controlled entirely by ventilation. In summer and fall the windows or ventilating flue are opened during the night, when the air is coolest, and are closed very early in the morning. In northern states, a temperature of about 50° may be maintained at this season in this way. The cold air may enter through windows, wooden flues or tile flues, the two latter being placed near the floor and extending through the wall and several feet outside. The house should of course be frost-proof.—The Garden Magazine for October.

OFFICERS, 1906, Minnesota State Horticultural Society.

PRESIDENT.

Clarence WedgeAlbert Lea

VICE-PRESIDENTS.

First Congressional District..... M. R. Cashman, Owatonna
 Second Congressional District.....C. E. Older, Luverne
 Third Congressional District.....H. J. Baldwin, Northfield
 Fourth Congressional District.....C. C. Dike, White Bear
 Fifth Congressional District.....Henry Haggard, Excelsior
 Sixth Congressional District.....Rev. J. B. Katzner, Collegeville
 Seventh Congressional District.....P. G. Jacobson, Madison
 Eighth Congressional District.....H. G. Westman, Sandstone
 Ninth Congressional District.....Ole J. Hagen, Hendrum

TREASURER.

A. B. LymanExcelsior

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)

Wyman Elliot (Chairman), 1 year.....Minneapolis
 Frank Yahnke, 1 year.....Winona
 John P. Andrews, 2 years.....Faribault
 Lycurgus R. Moyer, 2 years.....Montevideo
 Prof. Samuel B. Green, 3 years.....St. Anthony Park
 J. M. Underwood, 3 years.....Lake City

SECRETARY.

A. W. Latham.....Minneapolis

Office and Library, 207 Kasota Block.

Address business communications and all remittances to the secretary.

ASSISTANT LIBRARIAN.

E. A. Cuzner..... Pillsbury Hall, Minneapolis
 (The assistant librarian has charge of the surplus reports of the society, which are stored at Pillsbury Hall, State University. A part of the reports are stored in Horticultural Hall, at the State Experiment Station, in charge of Prof. S. B. Green.)

SUPERINTENDENTS OF TRIAL STATIONS, 1906.

Prof. S. B. Green (State Experiment Station).....St. Anthony Park
 T. E. Cashman.....Owatonna
 Dewain Cook.....Windom
 O. M. Lord.....Minnesota City
 A. B. Lyman.....Excelsior
 F. L. Harris.....La Crescent
 L. R. Moyer.....Montevideo
 Mrs. Jennie Stager.....Sauk Rapids
 J. S. Parks.....Pleasant Mounds
 F. J. Cowles.....West Concord
 F. B. McLeran.....Wrenshall
 A. H. Reed.....Glencoe

STANDING COMMITTEES FOR 1905.**Fruit List.**

J. P. Andrews.....Faribault
 Prof. S. B. Green.....St. Anthony Park
 Thomas E. Cashman.....Owatonna

Seedling Fruits.

Wyman Elliot.....Minneapolis
 Prof. S. B. Green.....St. Anthony Park
 Dewain Cook.....Jeffers
 Frank Yahnke.....Winona

Ornamental List.

Le Roy Cady.....St. Anthony Park
 A. W. Hobart.....Minneapolis
 C. M. Loring.....Minneapolis

Nomenclature.

Geo. W. Strand.....Taylor's Falls
 Prof. N. E. Hansen.....Brookings, S. D.
 Clarence Wedge.....Albert Lea

Publication.

Prof. S. B. Green.....St. Anthony Park
 Wyman Elliot.....Minneapolis
 A. W. Latham.....Minneapolis

Secretary's Corner.

PLANT APPLE SEED—a few each year, from choice Minnesota grown fruit, and take a hand in the new prize contests.

DELEGATE TO THE SOUTH DAKOTA MEETING.—Mr. Peter Siverts, of Canby, Minn., is to represent our society at the coming annual meeting of the South Dakota Horticultural Society. This meeting will convene at Groton, South Dakota on Jan. 23d.

HORTICULTURAL MEETING AT ALBERT LEA.—The South Minnesota society are planning for a big meeting at Albert Lea on the 22nd and 23rd of this month. Members convenient to that locality should plan to get around there at that time and "bear a hand."

DELEGATE TO THE WISCONSIN MEETING.—Mr. A. Brackett, of Excelsior, is to represent our society at the annual meeting of the Wisconsin State Horticultural Society, which convenes in Madison, Wisconsin, February 6, 7 and 8. His report of the meeting may be expected in the March issue.

REPORT OF THE IOWA MEETING.—Mr. Dewain Cook was selected as delegate to represent the society at the annual meeting of the Iowa society, which convened in Des Moines the week after our annual meeting. An excellent report of this meeting appears in this number through the promptness of our delegate.

IS YOUR MEMBERSHIP FEE PAID FOR 1906?—If you are one of the few who have overlooked this little matter till now, will you please give it prompt attention as your notice is here called to it? The annual volume for 1905, "Trees, Fruits and Flowers of Minnesota," is now ready for distribution and will be sent promptly on receipt of annual fee.

THE SOUTH DAKOTA INSPECTION LAW.—It has lately come to our knowledge that South Dakota has recently passed a law similar to the Minnesota Inspection Law, and that hereafter all nursery stock shipped into that state must bear the certificate of the inspector. This will be valuable information to the nurserymen of the state, and it may be to others who may wish to make similar shipments.

ILLINOIS SEMI-CENTENNIAL MEETING.—The Illinois society celebrated its fiftieth anniversary the week following our annual meeting. We were honored by the presence there of Mr. Roy Underwood as representative of the Minnesota society. The gathering was an interesting one, and Mr. Underwood gives us the benefit of his observations in attendance on another page of this monthly, to which the attention of our readers is invited.

ANNUAL MEETING, MINNESOTA STATE AGRICULTURAL SOCIETY—will convene in Minneapolis Jan. 9, 10 and 11, for the regular election of officers and transaction of other business. "A program of unusual interest" is promised in their announcement, but at the time of our going to press it has not yet come to hand.

• QUESTIONS ABOUT STRAWBERRIES.—What is the one variety of strawberry to which no one objects? Ans. Bederwood. What three varieties for commercial purposes have the most money in them? Ans. Bederwood, Warfield, Enhance. What are the best five varieties with no objections? Ans. Bederwood, Warfield, Aroma, Parson's Beauty, Brandywine. For amateurs: Dunlap, Jesse, Marston and Glen Mary. Answered by Geo. J. Kellogg, Lake Mills, Wis.

SEEDLING EXHIBIT FROM OWATONNA STATION.—One of the most interesting exhibits at the late winter meeting of our society was made by Thos. E. Cashman, superintendent of the Owatonna trial station, of over sixty varieties of seedling apples, some originating there and others sent there for testing. Some were winter sorts of much prospective merit. This fine showing alone is sufficient endorsement of the value of the work of this station and gives promise of still better results.

ABOUT MINNESOTA SQUASH.—It will be interesting for Minnesota squash growers to know that their product is regarded as especially good in the Boston market, which is perhaps the most critical of any market in the country. I have recently received a letter from an eastern professor of horticulture, asking if I could give him the reason for this, and he wants to know if it is because of any special method of culture, selection of seeds, adaptable soils or new lands. (Prof.) Saml. B. Green.

PLANT APPLE SEED.—Save seed if from only a single Minnesota apple to plant next spring and enter the field as contestant for the \$100 prizes. Encourage the children to do this, and they will be "young people" when the prizes are awarded, 6, 7, 8, 9, 10 and 11 years from now. What better way of creating an interest in horticulture than to watch the development of trees grown from the seed of some known variety of home grown fruit in anticipation of the unknown in their fruitage!

A GOOD WORD FOR THE PRIDE OF MINNEAPOLIS AND OTHER CRABS.—Ole J. Hagen, Hendrum, in the Red River Valley, speaks very well of the Powers, Greenwood and Pride of Minneapolis crabs, and wants to know where they can be obtained, as it seems the nurserymen generally do not grow them. He says, "These trees do so well here that I think it a pity that our northwest farmers do not own a few trees of these varieties. They are the leaders this year on my place, and even though not of much commercial value they are valuable for home consumption. Who knows anything about the 599 apple?"

THE AMERICAN BREEDERS' ASSOCIATION.—This association holds its annual session this year at Lincoln, Neb., on Jan. 17, 18 and 19, at the same time and place as all the various agricultural associations of Nebraska convene. The program reveals this, that the Breeders' Association holds one session jointly with each of the Nebraska societies. The joint session with horticulture has five numbers, all to do with breeding new fruits. Prof. Hansen ap-

pears on this program with Mr. Patten, Prof. Beach, of Ia., etc. The Breeders' Association, with Hon. W. M. Hays as secretary, have worked up a great program. Send to him at the National Capitol for a copy.

ORCHARDS BY THE SCORE IN THE RED RIVER VALLEY.—A communication from Ole J. Hagen, Hendrum, in the Red River Valley, speaks of many large orchards being planted there from one to as high as five acres in a single orchard. Fruit trees have done so well there in the last few years that planters are encouraged to go into this enterprise on quite an extensive scale. As orcharding is still simply an experiment in that region and conditions have not heretofore seemed especially favorable to this industry, it would seem the part of wisdom to set only the hardiest varieties in small quantities and study the situation. Above all things get in touch with the State Horticultural Society.

NEW PRIZES FOR SEEDLING APPLES.—The executive board of the society has decided to offer \$100 a year for six years, for best winter seedling apples, to be grown on trees the seed producing which is yet to be planted. The first prize will be awarded six years from now, and one annually thereafter for five consecutive years. Full particulars as to this new offer will be found in this number. This is a contest in which every member may take part, as it is only the matter of planting a few apple seed and watching the trees grow until they come into bearing. If you don't secure the prize, you are quite certain, by following directions, to get something that is hardy and of real value to you. Don't fail to read the article referred to carefully and save a few apple seeds for spring planting. Read also the article following it, by Mr. Elliot, on saving and planting apple seed. (See pages 30 and 36.)

A PLANT BREEDERS' AUXILIARY.—A new auxiliary to our society was organized the second week in December with a goodly number of the older members of the society as charter members. The name of this organization is "The Plant Breeders' Auxiliary of the Minnesota State Horticultural Society," and its object seems to be well set forth in this title. It is "to encourage the origination of new horticultural plants adapted to Minnesota." The constitution of this auxiliary has not been definitely decided upon in all its details but will appear in an early number of our monthly. That the affiliation of those in our society interested in the development of new fruits, flowers, and other plants especially adapted to our region will result in good there is no question, and the purpose is to invite all who are interested in this subject to co-operate in this way to advance the exceedingly desirable end in view.

"PRACTICAL COLD STORAGE"—is the title of a book fresh from the press, by Madison Cooper, well known in this region as authority on refrigeration. The work is an exceedingly comprehensive one, covering not only the practice and methods of construction of cold storage houses and their operation, but also the handling and storing of all varieties of products that are kept in such places, giving, it would seem, very complete information on the subject. It is an unusually handsomely gotten up book, 9½ by 6½ inches, containing 560 pages, printed on heavy half-tone paper and profusely illustrated with diagrams, plates, sectional views and half-tone cuts. Any of our readers who are contemplating the construction or operation of any kind of a plant for keeping articles in refrigeration would do well to secure a copy of this comprehensive work. It is for sale by the author, Madison Cooper, Watertown, N. Y. Price in substantial cloth binding, \$3.50.

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SEEDLINGS: THEIR INCEPTION, TREATMENT AND USES.

J. M. UNDERWOOD, LAKE CITY.

This subject that I am asked to speak upon this afternoon is undoubtedly the most important one that pertains to our north-western horticulture, and I only wish that I could treat the subject as it demands, although much of the ground has been covered in the discussion of the past few days. However, it is so important that if I go over the ground that has been covered during this meeting it will do no harm, but will only emphasize its importance.

By seedling we usually understand some tree or plant grown from seed without any precaution to reproduce the same variety, but the term has a very much wider application than is generally supposed. One might almost claim that every variety of tree, fruit or flower is a seedling in its origin—it is only after it is perpetuated by grafting, budding, layering, or grown from cuttings, that the term seedling ceases to apply. The Baldwin apple, as indeed all of the commercial varieties of apples, so far as I know, are seedlings without having been intelligently and systematically bred. The same is true of pears, peaches, plums, cherries and all the small fruits. There are some exceptions where fruits and flowers have been bred by hand pollination by the uniting of the pollen of one variety with the stigma of another variety, thus producing a third and different variety.

In the vegetable creation, this process has been mainly left to nature, and so we have had only chance results, many of which are marvelous and intensely interesting, and of great value; but it is a slow and uncertain way, and it is time we took lessons from the rapid and wonderful progress made in the animal kingdom by those who have made it a study and have put intelligent selection into the breeding of animals until they have produced classes of animals that have the maximum amount of meat and available product, with a minimum amount of bone and waste material; or, as in the dairy breeds of cattle, they can accurately and intelligently increase the yield of milk and butter to more than four times that formerly produced from what we might call seedling stock.

Note, if you please, the wonderful improvement in horses by intelligent breeding, until strength or speed can be accurately controlled. And so all through the animal kingdom. Those engaged in it have been wonderfully successful in producing desirable results. Is it not high time that the vegetable kingdom should be as intelligently treated as the animal kingdom? Is it not quite as important that grains, fruits and vegetables should be given as thoughtful consideration as that cattle and hogs should be exalted to the overshadowing of everything else?

Witness, if you please, the money and enthusiasm that is manifest in the building of the great live-stock pavillion in Chicago, where in a few days people will throng to see and admire the fat animals that are ready for the shambles. They are not seedlings or scrubs, but the result of careful selection and intelligent breeding. Is it not time that agriculture and horticulture should learn a lesson from the breeders of live stock? Improve the grains and fruits and flowers and then, in the consciousness of the superiority of our calling, build a mammoth pavillion in which to make *our* displays, and let us demonstrate that our products are of quite as much interest as hogs and cattle.

What are the possibilities and how, then, can we best bring about improvement in seedlings? The possibilities are so many and so far reaching that I should weary you with their contemplation. In our own immediate interests in horticulture there is the most important of all, the desirable winter apple for Minnesota and the northwest, as good a keeper as the Ben Davis, as hardy as the Duchess, as prolific and good in quality as the Wealthy. Then we want it to be drought-resisting, so that the dry, hot summers will not injure it on the western prairies. In this particular, windbreaks and irrigation will *help* to overcome the difficulty, as their application is understood; but we must avail ourselves of *every* resource if we wish to succeed and obtain the best results.

Then we need a hardy cherry. What other fruit can equal it for sauce and pies? Knudson has already demonstrated that by "breeding" he has improved the sand cherry. Why not go on and cross the Morello on the plum, or perchance the "Hearts" or "Bigarreaus" could be made hardy by proper "breeding," and, mayhap, we could in this way improve our hardy Americana plums.

If apples, cherries and plums can be bred to suit our climate and palate, why may we not breed a race of peaches for Minnesota? I venture to say that if horticulturists had spent one-fourth the time and money to do this that stock breeders have to improve the fat cattle, we should now be shipping Minnesota peaches to the south

after theirs were all gone. Then there are the small fruits that need to be adapted to the northwest, raspberries and blackberries that will not need covering. And so we might go on for an hour and multiply the possibilities for improving fruit.

Besides the fruits let us seek the possibilities to be attained in improving our flowers. We go into ecstasies over the productions of nature, and they are truly wonderful; but shall not the mind lend to nature its power in this, as in so many other ways, to improve the varieties of the beautiful? Take, for example, the rose, admitted to be the queen of flowers. Why not instil into its nature a more imperishable character so that its beauty and fragrance shall not forsake us so soon? Then, too, we want a strain of hardiness bred into its nature, something adapted to Minnesota and the northwest. The wild rose is hardy here. Why not give it the size, beauty and fragrance of a Gen'l. Jacq. or an Ulrich Bruner? Surely we may hope to do this when we consider what nature unaided has accomplished.

Then we must improve our nut-bearing trees, as well as to vary the ornamental and shade trees. If Luther Burbank can improve the black walnut of California by breeding it to the English walnut, why may we not do the same by the black walnut of Minnesota? As in the other classes I have mentioned, the opportunities seem limitless.

Turning to vegetables, I must leave your imagination to suggest what may be done to our advantage. There is no doubt but that the yield in vegetables may be increased and their keeping qualities improved; at least adaptation to the locality can be made a feature for improvement.

Underlying all that has been mentioned, there are from an economic or financial standpoint much greater possibilities in the field of agriculture. It is estimated that if in the United States we should so improve our varieties of wheat and oats that we add one grain to each head or one kernel of corn to each ear, we would increase the value of the production \$48,000,000 in each year.

Having pointed out a few of the possibilities in seedlings, how can we treat them to the best advantage to improve our conditions? There is, of course, the method that has been universally followed, that of *selection*—as, for example, in fruits. Nature has carried on the process of breeding without any definite or prescribed rules, and as fast as we have noticed the results we have taken advantage of any improvements she has made. Some progressive and enthusiastic horticulturists have gone to nature's assistance and helped to control conditions so as to greatly increase the value of their results, but it has remained for Luther Burbank to take an advanced position

in plant breeding and startle the world with his accomplishments, until, as Edison is known as the "Wizard of Electricity," Burbank is called the "Wizard of Horticulture."

For forty years we have been taking advantage of what nature has done, selecting those varieties that have shown themselves to be best suited to our conditions here in Minnesota. Our success has been very encouraging, and yet, as I view it now, we could have done very much more if we had understood and practiced the principles of

Seedling apple tree in bearing on grounds of Jewell Nursery Co. grown from seed of Northwestern Greening.

plant breeding. How much easier it should be now to do this! Others have "blazed the trail," and it will not be so difficult for us to follow the path. It is a wide field which lies open for the student to enter. Naturally, I am most interested in that portion which is devoted to horticulture for Minnesota. No other state in the union has so much to encourage plant breeding. If we cannot take it up in the scientific way of Luther Burbank, we have the very practical example of Mr. Perkins. He planted a Malinda, surrounded it with

others of better quality, and, behold, the union produces the grand display that was exhibited at the state fair, and which we see here today! Mr. Lyman plants the Wealthy near Siberians, and lo, the union produces the wonderful apples that have for years said to us: "See what you can do if you will try! We are only chance seedlings." How much more you can do if you will make more careful or intelligent unions to secure keeping qualities!" They have associations for breeders of grains, horses, fat cattle, hogs, sheep, bees, poultry, dogs and cats. Why do we not have an association of fruit breeders, or shall we turn our society into a breeders' association and call it the "Minnesota Horticultural Breeders' Society?"

Practical fruit breeding will require time and money, but it will be worth all its costs. Its principles should be taught in our schools. Every district school in the state should have a text book upon the subject, and it should be taught in every grade from the primary to the graduating class. A school yard, with which I am familiar, was barren and muddy and so forbidding that steps were taken to improve it. Trees were planted and have come to furnish shade and beauty; the grounds were artistically laid out and planted to shrubs and flowers; a section was reserved for a play ground, but the rest was sodded and kept closely cut. One of the teachers remonstrated and thought the children should have the whole ground for play, but yielded to the argument that they had enough for that and that it would be of great value for them to learn to know and care for the trees and plants, admitting that she could not tell the name of a single one in the yard, not even of the grass. When these conditions prevail, is it not time that practical horticulture and plant breeding were taught? A little two year old child taught me to know and love flowers that I daily trampled under foot. I am sure that during childhood, while the mind is most receptive, is the best time to teach children the facts that are most intimately associated with horticulture.

I shall look to our schools of agriculture to take the lead in the intelligent and practical breeding of seedlings. We are already proud of what the agricultural department has done in increasing the yield of wheat and flax. Let the horticultural department come to the front and use a portion of the land for the breeding of hardy, late keeping apples, and other kinds of fruit. Our state society has \$1,000 hung up as a prize. Mr. Loring offers \$100 for a plum, and the Jewell Nursery Co. offers \$1,000 for an improved cherry. To quote the encouraging words of Luther Burbank:

"Cultivation and care may help plants to do better work temporarily, but by breeding plants may be brought into existence which

will do better work always, in all places and for all time. Plants are to be produced which will perform their appointed work better, quicker and with the utmost precision.

"Science sees better grains, nuts, fruits and vegetables, all in new forms, sizes, colors and flavors, with more nutrients and less waste, and with every injurious and poisonous quality eliminated, and with power to resist sun, wind, rain, frost and destructive fungous and insect pests; fruits without stones, seeds or spines; better fiber, coffee, tea, spices, rubber, oil, paper and timber trees, and sugar, starch, color and perfume plants. Every one of these, and ten thousand more, are within the reach of the most ordinary skill in plant-breeding."

Mr. J. M. Underwood: We need to go at this matter of planting fruit in a practical way, and it is my thought and wish that this society take it up in some form that will produce definite results. I want something that will correspond to the work done by a number of these stock breeders' associations. I am a member of the Holstein-Friesian association. I think it cost me \$100 to become a member. I have gone out of the stock breeding business and am only interested in horticulture. They have a herd book, and I want a herd book of horticulture. I want a book in which we can record the work that is being done by Prof. Hansen, Prof. Green, Prof. Sandsten, Mr. Perkins, Mr. Lyman and a number of others, or of any one who is taking up the work in a practical way, so that we can record the results which may prove a practical guide in our work of horticulture. (Applause.)

I want to make a practical application that each one of you can carry home; I want to call your attention to what Mr. Perkins did. He planted an orchard, a small orchard, you may say that he planted the Malinda apple tree and surrounded it with other apple trees. If I recollect the story correctly, as I heard it told, the Malinda kept all winter (I think Mr. Perkins told me this when I visited him at his home) and his wife, when cutting them up, preparatory to making apple pies, noticed that the seeds had started to sprout. She called Mr. Perkins' attention to it, and they concluded they would plant some of those seeds. They did so, and from that planting has come a large number of beautiful trees that are bearing beautiful apples, of which this is a specimen (indicating.) It does not look like a Malinda exactly; it is a great improvement. This is a practical plan of breeding—the breeding of an apple. It might have been done more definitely, so that we might know more accurately its parentage in the way of learning by what other varieties these trees were surrounded. It seems to me thoroughly practical to do our planting in that way. I want all of you, if you have the opportunity to do so, to go home with the determination that next spring you will take some late keeping variety, like the Malinda, and plant it out in an isolated position, or see that the trees which surround it are of an excellent quality, so that you can have the quality of two good apples, say like the Malinda and the Wealthy. What kind of a cross would it make to have the good

qualities of the Wealthy combined with the long keeping qualities of the Malinda?—or the Duchess with the Malinda? You could put out those two varieties in some isolated place, and I think we might reasonable hope for a cross that would furnish seed that would be of value and an improvement upon anything we have at the present perhaps.

In conclusion, I want to offer a resolution, or make a motion, to the effect that it is the sense of this society that our executive board shall plan, or work out a plan, for an auxiliary of this society to be known as "The Plant Breeders' Auxiliary." I believe such an auxiliary should do work like the breeders of animals and establish a herd book, or whatever you might call it, to suit the needs of horticulture. We can then go to work in a practical way, and I believe the results ten years from now will be such that we shall ask ourselves why we did not do it forty years ago. (Applause.)

Mr. Elliot: Right along this line of what Mr. Underwood said we should do I want to recommend what Mr. Seth Kenny has done. He has top-worked the Malinda on the Duchess. I have seen the fruit, and I have bought seventeen barrels of those apples and placed them in cold storage. Why? I saw the possibilities of valuable seedlings from that lot of apples. I have brought a bushel up here to give one to every man and woman that will take it home, take out the seed, plant it and look after it, care for it and watch it, and if any good results follow such planting they are to report them to the Minnesota State Horticultural Society.

Now, furthermore, at this morning's meeting of the executive board, when I told them my scheme, some one suggested that instead of distributing those sixteen barrels of apples to everybody, that we select some competent person and let him plant those seeds and then select the best of the trees that result and distribute them under certain conditions. We are here now for business. We have wandered too much heretofore, but from now on we should take up this matter in a practical way, we should try to make some advancement, we should try to give this thing as big a boost as possible. There is not another plant breeders' association in the United States, and let Minnesota be the first to inaugurate a movement of this kind. (Applause.)

Mr. Kenney: I want to say a word in regard to the plan I follow. I have about a bushel of those apples saved, and I am going to take out the seed and plant it, and when they get big enough to cut scions from I am going to graft them on older trees so we shall get results sooner.

Rev. C. S. Harrison, (York, Neb.): You have been talking about fruit breeding, now I want to say a word about flower breeding. I have been experimenting with peonies and phlox, and instead of going over to Europe for our flowers marvelous results can be achieved here. For a one cent stamp I will send to you a little pamphlet on this subject, and every boy or girl or woman can be engaged in this kind of work in trying to create new varieties of flowers. It is an easy matter, and you will be astonished at the marvelous results you can accomplish.

Vice-Presidents' Reports, 1905.

VICE-PRESIDENT'S ANNUAL REPORT, FIRST CONGRESSIONAL DISTRICT.

ROBERT PARKHILL, SPRING VALLEY.

In response to the circulars sent out full reports were received from every county in this district, Houston county excepted, and I wish to thank all who contributed material for this report for prompt replies and full reports.

I give a composite summary as follows:

Apples.—Injury by blight excepted, trees are in good condition, crop fair for an off year, and a few counties in western part of district report a good crop.

Plums.—Trees are in fair condition, but crop was a failure. Wet weather in spring given as reason for poor crop.

Cherries.—Generally a failure, but Winona county reports a good crop of the Homer variety.

Grapes.—A good growth, but crop a failure. Season too cold and wet, Campbell's Early barely ripening by October 30.

Raspberries.—Good growth of canes and crop above average.

Blackberries.—Generally a failure.

Strawberries.—Good growth and an abundant crop.

Nursery Stock.—On the whole a large increase of nursery stock planted, not only of fruit trees but also of evergreens. Condition good.

Blight.—"Most blight I ever remember." "Worst in thirty years." "We still continue to cut and burn blighted branches." "Spraying seems to be a help in fighting this disease."

Spraying.—Generally but little spraying has been done except in Winona and Wabasha counties. O. W. Moore, Spring Valley, reports spraying his orchard several times during the season. None of the reports give dates of spraying, but in most cases satisfactory results were obtained.

Winter Killing.—All hardy varieties wintered in good shape, and trees held their leaves moderately late in the season.

Wintering.—Fruits are in fairly good condition for wintering, and the large amount of moisture in the soil promises protection against root-killing.

BEST VARIETIES.

Apples.—Duchess, Wealthy, P. Greening, Peerless, Hiberna, Anisim, Okabena, Charlamoff, Malinda, Yahnke.

Plums.—Wyant, Surprise, Stoddard, De Soto, Miner, Hawkeye, Ames, Compass.

Cherries.—Homer.

Blackberries.—Ancient Briton, Snyder, Stone's Hardy.

Raspberries.—Loudon, Clark, Columbian, Gregg, Older.

Belt of Norway spruce on farm of A. K. Bush, at Dover, Minn.

Strawberries.—Bederwood, Warfield, Senator Dunlap.

Gooseberries.—Downing, Houghton.

Currants.—Red Dutch, White Grape.

Hardy Flowers.—Crocus, tulip, paeony, phlox, larkspur, asters, iris, pyrethrum, rudbeckia.

Hardy Shrubs.—Spirea Van Houtii, Bridal Wreath, new double lilacs, rugosa roses, syringa, hydrangea, viburnum.

A hail storm in the early summer damaged fruit considerably in the south part of Fillmore county, almost ruining the apple crop in D. K. Michener's large orchard. A great increase in fungous growths is noticed in every county in this district, successive wet seasons being given as the cause. The curculio seems to be doing more damage than formerly.

Fruit growers are slowly realizing the necessity of spraying, but seem unable as yet to decide as to the respective merits of the dust or liquid methods.

The owners of commercial apple orchards in this district can see as never before the necessity for cold storage facilities in profitably marketing a crop. Good apples were shipped west by the carload from some points in this district this season, bringing the growers only fifty cents per bushel at picking time. The co-operative plan of erecting and operating cold storage buildings might be a success at points where these buildings cannot be had otherwise.

I close with a quotation from "General Remarks" in one of the circulars: "Taken altogether we should pronounce the season of 1905 a success, though not remarkable."

VICE-PRESIDENT'S ANNUAL REPORT, SECOND CONGRESSIONAL DISTRICT.

FRED MOHL, ADRIAN.

All fruit trees came through the winter in fine, healthy condition, and the fruit crop this year of nearly all kinds throughout the

A Cuthbert raspberry field, at R. E. Hynson's, Mankato.

district has been abundant. The apple crop especially was large and of good quality. Cherries, plums, currants, raspberries, strawberries and grapes also bore a very satisfactory crop. Gooseberries had an off year and bore only a light crop.

The Wealthy twig-blighted some. Hyslop crab also blighted in the trunk and branches. Other varieties were not affected. This blight was brought about on account of excessive wet weather during the past two years, causing humidity of climate, or moisture-laden atmosphere, which is favorable to mildew, rust, rot, smut,

scabs and blights. As a rule orchards in this district in ordinary seasons are not subjected to these microscopic pests, which can readily be held in check by spraying, pruning and burning the affected branches.

With the proper selection of trees and ordinary care of the orchard, southwest Minnesota is destined to become an apple producing section equal to any of the Middle States. The first essential thing to success is the selection of trees as to varieties and such as are acclimated. Second, proper planting. Third, that after-care that gives your orchard the same cultivation you would give to a field of corn. Fourth, mulching each fall after ground is frozen to guard against root-killing. Fifth, protection from rab-

Clump of laurel leaf willow, at C. E. Older's, Luverne

bbits, field mice and sunscald by tying wood wrappers around the trunk of each tree. Sixth, spraying to avoid insect pests..

As to varieties to plant, the following is a reasonably safe list for this district:

Apples.—N. W. Greening, Wealthy, Hibernial, Patten's Greening, McMahon's White, Peerless, Longfield, Duchess, Fameuse, Malinda, Okabena, Wolf River and Walbridge.

Crabs.—Whitney, No. 20, Martha, Hyslop and Transcendent.

For other varieties of fruit trees, small fruit and shrubs, the list heretofore adopted by this society is a safe list to plant in this locality.

VICE-PRESIDENT'S ANNUAL REPORT, THIRD CONGRESSIONAL DISTRICT.

J. F. BENJAMIN, HUTCHINSON.

The spring of 1905 began in a very promising way and almost every fruit tree that was old enough blossomed full and looked very fine until the hot weather of June 14, when a large per cent of the apple trees, even in the nursery row, blighted badly. After that date we had an occasional hot day for a month or so, which caused more blight, until but a few varieties escaped being scorched—though the apple crop in my locality was very heavy until the severe wind storm of Aug. 20, which relieved the trees of a greater part of their burden where the orchards were not well protected on the west side.

In order to make a report that would cover the whole of this congressional district I used the printed blanks sent me by the society. I sent out twenty-five of these to various parts of the district with stamped envelopes for reply, and I received fifteen answers to the following questions as printed:

“What is the present condition of the fruits in your vicinity and kind of crop borne this year, 1905, by each, viz:” ..

The answers were as follows: ..

	Good	Fair	Poor	No answer
Apples	7	4	4	0
Plums	3	1	11	0
Cherries	2	2	3	8
Grapes	6	3	3	3
Blackberries	0	3	6	6
Raspberries	8	3	1	3
Strawberries	6	5	3	1
Currants and gooseberries...	2	0	0	13

(I believe in most cases these answers were given in regard to the crop borne only.)

“Has there been much nursery stock planted in your section this year and with what results?” Those who answered this and knew say, “there has been considerable planted and with good results.”

“Has there been much blight, and what has been done to combat it successfully?”

The universal answer to this question is, “Yes—more blight than during the past five years.” All there seems to have been done to check it is to cut off the affected branches and burn. This will have a tendency to help the appearance of the tree, if nothing more.

“What has been done in the way of spraying?” There seems to

have been very little done in this line, some claiming that their trees which were sprayed fruited less than those not sprayed.

"Did fruit trees or shrubs suffer any from the cold last winter? If so, what varieties, and what was the condition of the soil last fall? Did trees hold their leaves late in the season?"

1. No. Most everything came through all right except some raspberries which were not covered killed with late frost in the spring.

2. The soil was full of moisture.

3. Trees held their leaves until about the 10th of November.

"Are fruits going into the coming winter in good condition for wintering well, and is there much or little water in the soil?" All conditions are favorable. The late fall allowed the new wood to

Residence of Mr. J. F. Benjamin, Hutchinson, Minn.

ripen up before any frost came, and the leaves ripened on the trees, so that even when frost did come the leaves remained until the 24th of November, when they fell during a heavy wind after the rain of the day previous.

"Please give here a short list of fruits of all kinds doing best in your locality?"

Apples: Hiberna, Duchess, Patten's Greening, Wealthy, Peter, Northwestern Greening, Peerless, Longfield, Okabena, Charlamoff, Malinda, Red Anisim.

Crabs and Hibrids: Whitney, Transcendent, Sweet Russet, Virginia, Florence, Early Minnesota.

Plums: De Soto, Surprise, Wolf, Forest Garden, Weaver, Rollingsstone, Aitkin.

Cherries: Compass, Early Richmond, Homer.

Grapes: Beta, Moore's Early, Worden, Janesville, Concord, Agawam, Delaware.

Raspberries: Red: Turner, Marlboro, King, Cuthbert. Black or purple: Columbia, Gregg.

Blackberries: Snyder, Ancient Briton.

Currants: Long Bunch Holland, Victoria, White Grape, Red Dutch, Stewart.

Gooseberries: Houghton, Downing.

Strawberries: Perfect, Senator Dunlap, Splendid, Lovett, Clyde, Bederwood, Johnson's Early, Imperfect, Warfield, Sample, Crescent, Haverland.

Perennial Flowers: Peony, golden glow, larkspur, tiger lily, daisy, phlox, tulips, iris, sweet william.

Bearing apple trees, at Andrew Wilfert's place, Cleveland.

Hardy ornamental shrubs: Hydrangea, snowball, high bush cranberry, Van Houttii and Bridal Wreath spireas, ash-leaf spirea, flowering currant, Garland syringa, flowering almond.

Never before in this locality at this time of year has the outlook for a good crop been more promising than at the present time. Apple and plum trees are well covered with fruit buds, and all the new wood well hardened up, with plenty of moisture in the ground to carry them through the winter without root-killing. All canes of raspberries are well ripened and wooded, on account of the frost holding off so late in the fall, and the strawberries made a good growth, and there has been plenty of rain, so that runners are well rooted, and I never saw them looking any better in the fall.

One of the strangest things that has come to my mind while

driving through the country is that we find so many farmers who have not set out a berry patch to supply fruit for the table. If such men would only stop and think they would know that the days of the tree humbugger is past in this state and that the raising of many varieties of apples, plums, grapes, etc., is no longer an experiment. All a man needs to do is to invest a small amount of cash in a few of the trees, plants and vines which are recommended by this society, combine a little labor with a reasonable amount of common sense, and he is just as sure of a crop of fruit as he is of a crop of wheat or corn. There is nothing that will keep a family at home better than to supply them with an abundance of delicious fruit from your own garden. It will do your heart good to see the little children watch the apples on the trees day by day until they are allowed to pick them. Then watch the little eyes sparkle with glee and happiness! Will you then say you are not compensated for the expense and trouble you have had caring for those trees?

I have been in my new home but five years. Then there was not a shrub or tree on the land, now I have ten acres in fruit and am planting more each year. About four hundred of these trees bore their first crop this year, and I now seldom sit down to a meal at home that our table is not supplied with fruit of some kind of our own raising, from a dish of strawberry sauce to a Patten's Greening apple, weighing nearly a pound, of which we had several bushels this season. What I wish to impress on the mind of the average farmer is to make your home surroundings better, plant more fruit, more evergreens, more flowering shrubs, and you will have more happiness and enjoy the fruits of your labors, and the world will be better because *you* lived in it.

VICE-PRESIDENT'S ANNUAL REPORT, FOURTH CONGRESSIONAL DISTRICT.

W. J. TINGLEY, WITHROW.

In making this report I was assisted by our secretary, who mailed me twenty-five circulars, with the necessary questions for a full report of the condition of fruits in general. These reports were sent out Oct. 1st to fruit growers as far as I was acquainted, and where I did not know any fruit grower personally I sent them to members of our society who resided in my district.

Question (1). What is the present condition of the following fruits in your vicinity and the kind of crops borne this year, 1905? Each of the correspondents reports *apple* trees in fine condition,

with one exception, and this one reports the trees blighted badly. The reports from the north half of Washington and Chisago counties were very flattering, my correspondents in the north all reporting a good crop while in the south and west portion the crop was reported rather light.

Plums.—The trees are all reported to be in fine condition; about half report a light crop and the other half report not any.

Cherries.—The most of the answers to this question were "not any grown." One said "my Wragg gave me the best crop I have ever had." (This was from the north.) Three answered "All dead except Compass, which gave me a good crop."

W. J. Tingley, Withrow

Grapes.—The most of the answers to this question were "not many grown," while two answered "vines looking well and a good crop."

Blackberries.—All report a heavy crop and canes in fine condition.

Raspberries.—Six report the crop fair and heavy; all report the canes in fine condition.

Strawberries.—All report strawberry beds in fair condition—the crop almost a failure to fair.

Gooseberries and Currants.—All answers, "look splendid and crop medium."

Was there much *Nursery Stock* planted in your section this year

and with what success? One answered "not able to say;" four "a considerable amount and stock looks well;" one answered "a good deal and lots of poor and not hardy stock."

What is being done in way of *spraying* orchards? All report "nothing."

Did fruit trees and shrubs *suffer* any *from cold* last winter? What were soil conditions last fall? Answer: There was little or no injury from the winter apparently on the hardy varieties, the leaves were mostly fallen and the wood well ripened.

Are fruits going into this coming winter in good condition for wintering well, and is there much or little water in the soil? One answered "plenty of moisture and most trees maturing well, but some newly grafted stock is growing a little yet." Another answered, "there is an abundance of water in the soil, but the foliage is yet quite green on the trees." All others answered "soil has plenty of water, and the trees and plants are maturing well."

All hardy fruits and shrubs came through the winter without apparent damage. The cold spell in the first half of April, perhaps, did some damage in reducing the fruit crop.

The local markets with the exception of St. Paul were entirely bare of Wealthy apples. There was quite a good crop of Duchess and some Hiberna, Okabena, Wolf River and University. These trees all appear to do well.

There was a light crop of crab apples, with the exception of Strawberry and Florence. These two varieties appeared to be free from scab; Virginia, Transcendent and Lyman's Prolific suffered much with scab, and the apples were very small and poor.

All forest trees made a heavy growth. The white and blue spruce are doing well, and are handsome trees. The good work of the Minnesota Horticultural Society is extending all over the state, and before many years we will be raising all the apples, plums and small fruits we need.

Has there been much *blight*, and what has been done to combat it? Seven of my correspondents did not answer this question. Two reported "blight bad." Blight was especially bad in south half of Washington county. All my northern correspondents report but little blight.

FRUIT LIST:

Apples.—Duchess, Patten's Greening, N. W. Greening, University, Okabena..

Crabs and Hybrids.—Virginia, Florence.

Plums.—De Soto, Rollingstone, Cheney.

Raspberries.—Loudon, King, Columbia.

Strawberries.—Splendid, Glen Mary, Warfield, Bederwood.

Desirable and hardly *perennial flowers*.—Peonies, phlox, rudbeckia, golden glow, oriental poppy, achillea.

Hardy Ornamental Shrubs.—Hydrangea, spirea Van Houttei, golden elder, tamarix.

University apple tree, five years set, bearing one and one-half bushels,
on farm of W. J. Tingley, Withrow.

**VICE-PRESIDENT'S ANNUAL REPORT, FIFTH
CONGRESSIONAL DISTRICT.**

J. O. WELD, MOUND.

In summing up the answers from the different blanks which I sent out, I make the following condensed report for my district:

Apples.—Fair crop. Plums, very few. Cherries, none. Grapes, scarcely any. Blackberries, good crop. Raspberries, good crop. Strawberries, poor crop. Currants, good.

There have been a good many young trees set out, and they look well. There is considerable blight, and no remedy. Some spraying is done, but not generally done. All trees and vines wintered well. Fruits are going into the present winter in good shape, and the soil is abundantly moist.

From my experience and observation, I wish to emphasize the idea of my friend, S. H. Kenny, of Waterville, in regard to vigorous pruning before the apple trees get too old and the limbs too large so that the cutting would injure the tree. This should be done about the first of June, and I will give some reasons why this should be done:

Orchard of fifty University apple trees eight years set, on fruit farm of
H. L. F. Witte, near Minneapolis.

First. If too many branches are left on the tree there will not be sap enough to support the fruit, the leaves and the new growth and to ripen the fruit buds for the next season, so that it will take one season for the tree to recover its vitality.

Second. If properly trimmed there will be strength enough to do all the work of the tree spoken of above and the result will be a crop every year.

Third. The fruit will be very much larger and better.

Fourth. The sun can get into the tree and color and ripen the fruit so much better that it will bring full twenty cents more per bushel in the market than if grown in the shade.

Fifth. The remaining branches will grow so much faster and become matured to bear up the fruit and withstand the hard winds.

Sixth. The tree being more open will let the hard winds pass through instead of being blown down.

Seventh. Room is thereby made to get up into the tree for the purpose of picking, pruning, etc.

The Chairman: I do not like to have the chair utter an opinion, but my notion is if you are going to prune the apple orchard you want to do it with pretty good judgment.

J. O. Weld, Mound.

Mr. C. F. Gardner (Iowa): Are there not more trees in Minnesota and Iowa killed by pruning than by not pruning?

The Chairman: If that is a personal question I want to say that in my humble opinion there are. In my opinion in this country we do not need as much pruning as they do down east.

Mr. C. F. Gardner: If people here want to grow fruit they had better keep away from Massachusetts and other eastern states. (Laughter.)

The Chairman: In Minnesota and this country up here the conditions are so different from what they are in the eastern states

that we have got to work out the problem ourselves; we have got to get a system of horticulture of our own, and we cannot depend upon any other section of the country as a guide. I am glad Mr. Weld brought up this point because there is a kernel of truth in it that ought to be brought out, but I hate to have it go in the record without a little protest.

VICE-PRESIDENT'S ANNUAL REPORT, SIXTH CONGRESSIONAL DISTRICT.

W. H. EDDY, HOWARD LAKE.

In preparing a report of the general fruit interests of this congressional district, I am compiling the information in the reports received throughout the district with what I have observed during the past season, in the growth, hardiness, quality and productiveness of trees, shrubs and plants.

The apple trees made a good growth. The Wealthy blighted considerably more than any other kind; Hiberna, Patten's Greening, Malinda and Okabena stood climatic conditions better than any others of the large apple. The fruit of all bearing kinds was more or less scabby and inferior in size, although the Hiberna, Patten's Greening and Okabena were nearly free from scab or defect in the skin of the apple.

The crabs and hybrids bore about 50 per cent—the Sweet Russet and Whitney No. 20 bore best with about 90 per cent of a crop. The Lyman's Prolific in tree looks very promising, but the fruit was very scabby. An abundance of moisture with little sunshine is the cause of the inferior fruit to a certain extent. Until we spray our orchards to kill the germs of fungous diseases, we shall have more or less inferior fruit.

The plums in tree are doing well. Among the best varieties here are De Soto, Forest Garden, Wolf, Wyant, Rollingsstone, Cheney and Surprise. The Surprise and Wyant take the best in our markets. The crop was about 40 per cent. The plum pockets were more plentiful than plums on the Wolf and the Aitkin.

Cherries.—A pretty good crop considering the few trees planted. The Homer, Black Morello, Compass and Rocky Mountain, or sand, cherry are among the best varieties.

Grapes.—The season was too cold and damp to expect many grapes. The crop was about 30 per cent; quality rather poor and very late in ripening.

Blackberries.—Bore about 70 per cent. The plants came through the winter in good condition where they were slightly covered. If we want to pick berries, we must cover, mulch, trim and cultivate the plants.

Raspberries.—Were an excellent crop of 95 per cent of red and black caps. The raspberry enjoys the freedom of old wood and choice, rich, mellow soil, with an abundance of rainfall, while it is forming and ripening its fruit. They also love that blanket of mulch to draw moisture from when needed.

Strawberries.—Were nearly next to no crop, about 20 per cent. The late frost with the continuous cold rains prevented the distribution of pollen among the flowers to fertilize the berries.

Currants and Gooseberries.—Yielded about 90 per cent where the currant and gooseberry were kept free from currant worm and mildew. We like to use Paris green on the currant bushes just after the currant is well formed, or when we first notice the currant worm working in the bushes. It brings good results and is not dangerous if applied a week or ten days before the currants are ripe. We like to keep the gooseberry bushes up by using old barrel hoops or crotched stakes, to keep them from mildew during wet seasons. North Star, Stewart Seedling, Pomona, Red Dutch, Long Bunch Holland and White Grape currants are among the varieties most generally planted; the Houghton, Downing, Smith's Improved, Pearl and Red Jacket are the most favored gooseberries.

We find the dwarf Juneberry, buffalo berry, high bush cranberry and Lucretia dewberry doing well with proper care.

There was more nursery stock planted the last spring than ever before, and about all the stock planted was purchased from northern nurseries. Our northwestern horticultural people are aware of the fact that they must plant hardy apple trees if they want to succeed in orcharding, and our northern nurseries want to furnish their customers with hardy trees, which means successful orcharding in Minnesota. We find that blight and sunscald are the two tender points of an apple tree. We need to learn more of the ways of overcoming these difficulties as well as the tree sharks.

The Northwestern Greening and Winter King suffered some from cold last winter. Fruits are going into winter quarters in good shape.

Following you will find a list of fruits doing best in general through our district on black loam with clay subsoil:

Apples and Crabs: Hibernial, Patten's Greenings, Duchess, Anisim, Malinda, Whitney No. 20, Sweet Russet, Virginia, Dart's Hybrid, Okabena, Briar Sweet.

Plums: De Soto, Forest Garden, Wolf, Wyant, Rollingstone, Surprise, Cheney. *Cherries:* Compass, Rocky Mountain, or sand cherry.

Raspberries: Red, purple and black cap: Turner, Marlboro, Loudon, Golden Queen, Columbia, Gregg, Nemaha.

Strawberries: Senator Dunlap, Bederwood, Warfield, Crescent, Enhance.

Grapes: Niagara, Worden, Concord, Delaware, Agawam, Janesville, Moore's Early.

Currants: Stewart, North Star, Red Dutch, Long Bunch Holland, White Grape, Pomona.

VICE-PRESIDENT'S ANNUAL REPORT, SEVENTH CONGRESSIONAL DISTRICT.

G. A. ANDERSON, RENVILLE.

It seems to be rather difficult to make a report of this kind so it will cover the entire district as one might wish. Out of about twenty-five circular letters sent out to the horticulturists throughout the district only about one-half replied.

G. A. Anderson, Renville.

Conditions and prospects of fruit, especially apples, plums and the small fruits, are very promising with few exceptions throughout the district. Apples were a good crop on trees that did not bear too heavily last year. The varieties doing best are the Wealthy, Duchess, Hibernial, Whitney and some others. The Haas and Walbridge gave us a good crop this year; the Wolf River does well also, though the quality is rather poor—but they seem to sell well in the market. The trees of the Northwestern Greening are very promising, but as yet few are in bearing. Okabena, Peerless and Patten's

Greening trees are doing well but have not fruited long enough to test them yet.

Of crabs I think there is none better than the Whitney, both in tree and fruit. The Martha and Virginia, especially the Martha, were badly affected with some kind of leaf rust. The fruit was also spotted, which made it almost worthless. From years of experience I consider the Martha worthless for planting.

There was considerable blight on apple trees this last summer, the Wealthy, I think, suffering the most, some young trees being almost destroyed. As a rule young trees set three or four years were affected most, while old trees of Wealthy had scarcely a trace of blight. This in my experience seems to be the reverse of former years. I am of the opinion that the cultivation had something to do with it, the young orchard having been thoroughly cultivated since planted, while the old orchard has been in sod and mulched for the last twelve or fifteen years. I think that in our rich prairie soil, such as we have in Renville county, we shall have to guard against too much cultivation, as we get too heavy growth, which, I think, is more subject to blight. I have trees in the cultivated orchard that this summer made a growth of from three to four feet.

The native plums are doing well, but this year's crop was only fair in most sections.

Cherries wherever tried are reported as worthless. It appears we cannot raise enough to satisfy the birds.

Grapes and blackberries are not as yet planted to any great extent, but where tried are doing well.

Raspberries were a good crop. Varieties doing well are Turner, Cuthbert and Loudon.

With very few exceptions strawberries throughout the district were a very good crop, especially on new beds, old beds not doing as well as in former years. The market being good for them, returns were satisfactory. Varieties doing well are Warfield, Lovett, Splendid and Bederwood. I fruited the Johnson's Early, Dornan and Aroma this year, but they were worthless with me, at least this year. I was disappointed with the Seator Dunlap, the yield being light. Strawberry plants set this year have made a good growth and are in good condition for a crop next year.

Some report the Compass cherry as doing well.

One reports the strawberry-raspberry growing good but thinks it will be worse to eradicate than Canada thistle.

Reports indicate that there has been much nursery stock planted throughout this district and with good results. In my county apple orchards of from 100 to 500 trees are now quite common, so we

think the time is not far distant when the seventh district will produce more apples than they can consume, especially of fall apples, this being what is mostly planted. What we need is a good winter apple, and I am in hopes the Northwest Greening will partly fill this want.

In regard to spraying I think there has been nothing done so far, and with the exception of blight and rust on the Virginia and Martha crabs don't think it has been needed yet. I do not think spraying will prevent blight.

Of forest trees, the white elm, ash and soft maple are the best for prairie planting. Black walnut and catalpa are doing well. Of evergreens, the red cedar has been planted quite extensively, as it is found growing along the Minnesota River and has been transplanted to the prairie farms. The Scotch pine and Norway spruce seem to succeed also.

Ornamental shrubs doing well are the lilacs, snowball, spireas, syringas, honeysuckles, flowering currant, barberry and others, all of which are perfectly hardy without covering. The Paul Neyron rose, rosa rugosa and others of its class can be raised by covering in winter.

Summing up, fruit trees and plants of all kinds are going into winter quarters in good condition with wood well ripened and plenty of moisture in soil. Apple trees are well loaded with fruit buds, and with favorable climatic conditions promise a good crop next year.

Now a word in regard to pruning. On apple trees I think I should do as little pruning as possible. I think the less pruning we do of trees that stand on the open prairie the better it is for the trees.

The Chairman: Did I understand you to say that your crop of strawberries was good?

Mr. Anderson: Yes, they were good in new beds, but the crop on old beds was poor. On new beds the strawberry crop was very fine.

Mr. C. F. Gardner, (Iowa): I want to say I consider that a good orthodox report. (Laughter.)

VICE-PRESIDENT'S ANNUAL REPORT, EIGHTH CONGRESSIONAL DISTRICT.

F. B. MC LERAN, WRENSHALL.

The territory covered by the Eight Congressional District is, as yet, far from being what could be called a fruit producing country. After a careful investigation and close observation I find that those interested to any extent in fruit growing are few and far between, and I find also that this lack of interest is not without reason. It

has been the almost undisputed opinion, both at home and abroad, that we are "too near the north pole" up here to grow anything except rutabagas and pine stumps. You will also bear in mind that this is a newly settled country, one from which the lumbermen have hardly passed. The few pioneers, who, with the love for a home garden and a little home grown fruit, have had the courage to purchase a few trees and small fruits have almost invariably had their slight hopes of success shattered by the cunning, the dishonesty and the imposition of a band of smooth tongued highway-men, commonly known to us as dishonest tree peddlers. I do not

Mr. Kroschell and bearing Wealthy tree, four years set, at Hinckley.

know how it may be in other parts of the state, but I do know that in our own section these "tree peddlers" have done worlds of shameful damage to horticultural interests that it will take years of persistent effort and example of honest horticulturists to eliminate. Perhaps you think I am a little harsh or that I have some personal grievance against this particular branch of mankind. Be that as it may, I have not been taken in myself, as I have purchased all my stock direct from well reputed nursery-men who are members of this society. What I say is what I know to be absolute truth, and a condition against which, in my opinion,

this society should use its influence. While I do not think apples and plums will ever be grown here in a commercial way, I am glad to say that I know, and have proven, that apples, excellent ones, can and are being grown in a small way, in the home orchards.

But small fruits—that is where we are going to shine. I sincerely believe that before many years you will see about the head of old Lake Superior, one of the greatest, if not the greatest, sections for strawberries, currants, gooseberries and raspberries in this state, if indeed, not in the United States. This is a strong statement to make, but if you will come with me in season I will show you hundred of acres of wild strawberries, gooseberries, currants and raspberries that will make many of your coaxed and petted tame kinds hide their heads in shame. If you will take the trouble to investigate, you will find the grand prize at St. Louis awarded to a Duluth grower of strawberries. Come to this section in season, and I will show you lots of strawberries, eighteen of which will fill a quart box. This section is going to grow big berries and late berries. Late springs, cold nights and damp days make our fruit very late; cool nights, damp days and plenty of rain make slow growth, and slow growth gives our fruit time to grow very large. A heavy covering of snow affords a good winter protection. Large fruit, late fruit, good markets, with a little enthusiasm, courage and push, will put this section in such a condition that the vice-president of the eighth congressional district a few years hence will have something from which to draw up a report.

I wish to say in regard to the blanks sent out by Mr. Latham, I had a very unfortunate experience. I sent out eighteen or twenty and succeeded in getting back one. My report therefore is confined very largely to my own observation.

VICE-PRESIDENT'S ANNUAL REPORT, NINTH CONGRESSIONAL DISTRICT.

L. JOHANNESSEN, BELTRAMI.

To make a report on fruit conditions of this district is somewhat of a difficult matter. There are plenty of good conditions but not enough fruit.

Small fruits, such as strawberries, raspberries, currants and gooseberries, are being grown on many a farm and town-lot garden. The same may be said of plums, although a large percentage of these are wild specimens of *Prunus Americana* taken from copses.

The apple, the most important of all fruits, is yet scarce. There

are enough trees, well established, healthy and bearing, to prove that both our soil and climate are adapted to apple growing. In fact, a few horticultural pioneers who had the enthusiasm and push have successfully carried apple growing beyond the amateur stage.

The raising of apple seedlings has also been taken up. I myself

Duchess tree, six years planted, on farm of Mrs. Elizabeth Kemble, Grand Forks, N. D., (in Red River Valley.) Photo taken in 1908. Two-thirds crop knocked off by hail.

have a fine lot of two years old, of which I intend to distribute a limited number next spring among local members of the society.

In some localities apple trees were affected by blight, notably the Transcendent and Hyslop crabs. The crop was good with some and poor with others.

The plum crop was apparently poor over the entire district.

Late frost, plum pocket and blight are reported as being the causes.

Cherries and grapes have been sparingly planted, and only few of either are of bearing age.

Strawberries suffered in some localities through excessive wet, but in some the crop was fair as to volume and fine in quality.

There being sufficient moisture in the soil trees have gone into

Glimpse of orchard on place of Rev O. A. Th. Solem, Halstad. Fruit trees on north side of windbreak.

wintering in good condition, and as the ground has now a good mulching of snow there is little danger of winter killing.

In conclusion I will mention that I am carrying on a series of experiments the success or failure of which will be reported to the society in due course of time.

WINTER SPRAYING FOR NURSERY AND ORCHARD.

PROF. F. L. WASHBURN, ST. ANTHONY PARK.

One can but notice in this state that although a young nursery in new ground looks clean for a few years, it shows as time goes on the results of the work of insects and fungous diseases, plant lice, tree hoppers, etc. A few scales also show the effect of their presence, and the curled and blighted leaves denote the presence of apple scab and various forms of blight. Just as this occurs in one orchard or one nursery, so will Minnesota, coming to the front as she is as a fruit growing state, show an increasing amount of fungous troubles and insect troubles from year to year, over all the fruit raising portions.

What I wish to say is given as a suggestion based upon work in other states and observations here. I am more and more convinced that winter spraying is a necessity here. This does not necessarily mean spraying when the thermometer is ten degrees be-

low zero but simply spraying when the trees are dormant with some compound which will not injure the trees in that condition and yet is strong enough to kill insect eggs and plant spores which would cause mischief if allowed to remain. Perhaps the best way for me to state this matter in the short time at my disposal is to name to you certain stages of different plant diseases and of insects which occur in winter. We have the eggs of various plant lice—little shiny black specks which you see in the axils of buds, notably the eggs of the apple aphid and of the plum aphid. The eggs of the woolly aphid and of the so-called "red spider" are also present in winter. We have the eggs of the scurfy scale and of the oyster shell scale, more or less common in our orchards on older trees.

FIG. 1—Oyster Shell Bark Louse. *a*. Female scale from beneath; *b*. same from above; *c*. infested tree; *d*. Male scale. Bureau of Entomology, U. S. Dept. of Agriculture.

Among plant diseases we have winter spores of the apple scab, which affects both leaf and fruit, as you know; spores of the black knot of the plum, of the black rot of the apple, of the bitter rot of the apple and plum, as well as spores of plum pocket and, doubtless, spores of other fungous diseases. In the lime, sulphur and salt wash, which, it must be noted, can only be used on dormant trees, or perhaps, just as good and better, the lime and sulphur wash, we have something which will kill these spores and eggs. I will give you the formulae for both the lime, sulphur and salt, and the lime-

sulphur washes, and shall be glad to know which you find the more satisfactory. The first named wash is an old standby, but it seems to be conceded by all workers that the salt is not necessary.

Formula for "Lime, sulphur and salt wash:" Slake fifty pounds of quick lime thoroughly; then add fifty pounds of powdered sulphur, with sufficient water to cover, and boil for at least an hour; then add fifty pounds of salt, and boil about twenty minutes until the salt is dissolved; then add 150 gallons of water.

Formula for "Lime-sulphur wash:" Slake twenty-five pounds of lime by bringing the water nearly to a boil in a kettle, and while it is slaking add twenty pounds of sulphur. The sulphur is added at this time in order to take advantage of the heat from the slaking

FIG. II.—Scurfy Scale.

lime. Boil about half an hour and then add sixty gallons of water. This combination has been used by Dr. Felt, of New York state, with good results. It can be seen that the amount of boiling has been materially reduced by this method.

Some fungous spores may creep in in the spring from other sources, or, in view of the fact that your lime, sulphur and salt application may not have been thoroughly made and for other self-evident reasons, I should urge the use of Bordeaux mixture in the spring and during the early summer. This mixture is undoubtedly one of our best fungicides and rapidly coming into general use everywhere. I shall try to give you some general direc-

tions for the use of Bordeaux, a somewhat difficult matter, since with different plant diseases it would be used in somewhat different ways. In general I would suggest spraying the trees with Bordeaux just before the buds open and again just preceding the bloom in the case of orchard trees, and immediately after all the bloom has dropped; then about every two weeks for two or three applications. I believe this treatment if persisted in will make a marked change in many of our nurseries. I know of one nursery where dry Bordeaux has been used one or two seasons quite thoroughly, and this summer I was struck with the excellent appearance of the trees. I never have seen a finer lot of trees and more free from scab or lice attacks anywhere, and I ascribe this largely to the faithful use of Bordeaux and to clean cultivation. If you wish to compound Paris green with the Bordeaux it can be done to good advantage in the later sprayings, and will kill leaf-eating, or insects of the nursery, and fruit-eating, or insects of the orchard. Add about six ounces of Paris green or one gallon of arsenate of lead to every fifty gallons of Bordeaux mixture. It may be unnecessary to give the formula for making Bordeaux mixture, but since there are some, perhaps, who have not used it, it is included here.

Dissolve four pounds of copper sulphate (blue vitrol) in four gallons of water; slake six pounds of quick lime and allow to cool, and when wanted for use add twenty-five gallons of water to each solution, and pour the two different solutions together. There are other formulae for this fungicide, but in substance they are nearly identical. The copper sulphate solution should be kept either in a wooden or earthen vessel. This strength is perfectly safe and effective for fruit trees generally. On the young growth of plum, however, and cherry, it is best to use only three pounds of copper sulphate, with the same amount of lime and same amount of water. It is to be borne in mind that this fungicide only acts on the surface of the fruit or leaf or twig and, therefore, must be applied early enough and frequently enough to keep the surface coated. After the mycelium, in other words the threads of the fungus, get below the surface, the Bordeaux does not affect them.

Mr. Merritt: How will winter spraying do for plum rot and bitter rot?

Prof. Washburn: It will be all right for the destruction of those winter spores. The plum pocket I overlooked, but I should put that in the same category; that also has these winter spores. I am going to make a suggestion: I notice people taking notes, and they take those notes home with them and make up their minds to try this spraying and get rid of the troubles that are bothering

their trees. One man may do it properly, and another may not and he says this spraying is of no value to him. I think we ought to be careful in adopting remedies that are good for each particular condition though they may not be good for another condition.

I thought I heard some one ask a question about nozzles. In the use of salt and sulphur I have found the Bordeaux nozzle very good. Of course, it is understood that you strain the solution, whatever it is, before you put it in the barrel, and not through burlap, but through a copper or brass strainer. If you strain it through burlap the nozzle becomes clogged with fragments of lint. You can reverse this nozzle, and it will force the obstruction out. It is the best nozzle for applying lime, sulphur and salt or Bordeaux that I know of.

Mr. Merritt: Don't you think sulphate of copper will answer every purpose?

Prof. Washburn: That is very good. Some of you have done practical work with it and with a number of other things.

Mr. Taylor: Where you whitewash trees with lime and sulphur would not that be a good remedy?

Prof. Washburn: That is all right if you can cover the whole tree, but you cannot cover the finer twigs with it, nothing but the trunk of the tree.

The Chairman: Will it kill the bark louse?

Prof. Washburn: Yes, it will do that.

Mr. Frank Berry: I notice the Bordeaux mixture is advertised as a dry mixture, is it any good?

Prof. Washburn: The dry Bordeaux seems to be a good thing. I do not think you can apply the dust spray to as good advantage as you can the liquid spray. I have in mind the nursery of Fred. Mohl, at Adrian, where he used the dry Bordeaux thoroughly last year, and this year it is entirely free from the leaf hopper and free from lice, and it is one of the cleanest nurseries I have been in. He has used that method of spraying and is thoroughly convinced of its effectiveness so far as its use against those insect pests is concerned.

Mr. Tanner: Is that the only kind of dry dust spray they use?

Prof. Washburn: There is on the market another formula which they claim is as good as any mixture, but I do not believe it has a very great sale.

Mr. Kellogg (Wis.): Is it not better to apply the dry dust when the dew is on in the morning?

Mr. Elliot: It can be applied in the evening.

Prof. Washburn: It has to be applied when there is moisture on the foliage.

Mr. Elliot: I have applied it both morning and evening.

Prof. Washburn: Do you like the dry Bordeaux?

Mr. Elliot: Yes, I do.

Prof. Washburn: What kind of sprayer do you use?

Mr. Elliot: Kansas City cyclone.

Prof. Washburn: The large one?

Mr. Elliot: Both, the large one and the small one.

Mr. J. O. Weld: It seems to me in order to have spraying be-

come more general among farmers, who do not know much about mixing things, we ought to have some one handle this article already mixed. That is the way I found it in New Jersey. If a man wants to spray his trees he goes to the store and gets a gallon of this mixture, takes it home and mixes it with twenty gallons of water, and it is all ready. I tried last spring to spray my trees. I bought an expensive sprayer, paid \$5.00 for it, and undertook to mix some stuff with which I tried to spray, but I could not get it out of the nozzle of the sprayer, and I have not touched it since.

Prof. Washburn: You can't get a good sprayer for \$5.00; that is not enough to pay for a sprayer.

Mr. Weld: It seems to me it would be a good thing for a man to handle this mixture in this state, so that a man could go and get a gallon, or whatever amount he needs, when he wants it, without going to the trouble of mixing it himself.

Prof. Washburn: It is very expensive.

ANNUAL REPORT, 1905, WOMAN'S AUXILIARY.

MRS. ANNA B. UNDERWOOD, LAKE CITY.

The Woman's Auxiliary is a rather unique organization in that it has imposed on itself a task without ever being able to trace the direct results of its labors. The object in starting it was to institute a regular recognition of interests pertaining to the home and its surroundings, especially those located in the rural districts, villages and towns, these to be considered from a woman's standpoint.

With just one annual meeting, it is only possible at such times to have talks and papers that will serve as suggestions. We always strive to have these as practical as possible, and as they are listened to in our meetings, or read in the different numbers of the Horticulturist, they may awaken a desire for better surroundings and an ideal home life.

We have urged the improvement of school buildings; the changing of the usual bleak, forlorn school yard into an attractive playground for the children, trusting that the beautiful shrubs and flowers, the protecting trees and evergreens, would have a refining influence, extending in all directions to the homes of the children.

We have advised the establishment of neighborhood clubs for women, recognizing the fact that woman's lot on the farm or in the smaller towns is naturally more circumscribed than that of the man. He daily comes in contact with his one hundred and sixty acres of land, more or less; and of necessity goes to town frequently, in this way coming in contact with outside interests which serve to widen his horizon in a degree. He has an opportunity to discuss public matters and to see what other people are doing. The women at home, more particularly the mothers and home keepers, see little outside the four walls of their own dwelling for weeks at

a time, or if they chance to meet with a neighbor the temptation is too strong to talk over and thus augment their troubles and trials.

We have encouraged Nature Study in the schools, hoping thereby to educate the children to form the habit of investigating the wonders of life around them. This habit once formed will not be easily dropped.

Each year we have had many thousands of these practical papers printed in pamphlet form for free distribution. These have been sent to the different clubs of the state and also largely distributed at the state fair. We always have some one in attendance at the Federation Building, whose business it is to engage the women in conversation and to try to interest them in our work and to direct them to points of interest on the grounds, calling their attention to beautiful and attractive exhibits.

All we can hope for is to awaken a desire for better things; this desire once aroused, improvement is sure to follow sooner or later.

The secretary of the Auxiliary will always be glad to hear from any one who wishes to know more of the various lines of work advanced during the coming winter.

The officers of the Auxiliary for the year 1906 are: President, Miss Emma V. White, Minneapolis; vice president, Mrs. Jennie Stager, Sauk Rapids; secretary, Mrs. Anna B. Underwood, Lake City; treasurer, Mrs. L. R. Moyer, Montevideo.

AMENDMENTS OF CONSTITUTION OF THE MINNESOTA FORESTRY ASSOCIATION

RESOLUTION PRESENTED AT THE MEETING OF THE MINNESOTA STATE FORESTRY ASSOCIATION, DEC. 8, 1904.

Whereas, it is desirable that this association be placed more closely in touch with the people of the state so that it may become a more useful agency for the dissemination of information upon the subject of forestry, and

Whereas, a small fund should be accumulated to defray the expenses of publications which are in need of being issued and,

Whereas, co-operation between this organization and the State Horticultural Society should be helpful to both societies, now therefore, be it

Resolved: That the constitution be amended in the following particulars:

1st, Changing Art. VIII: That the secretary of the association be chosen by the executive committee instead of being elected by the association as a whole.

2nd, Changing Art. XII: That the membership fee be changed so that the fee for annual membership shall be one dollar, and for life membership ten dollars.

3rd, that the association become an auxiliary association of the Minnesota State Horticultural Society.

**CONSTITUTION OF THE PLANT BREEDERS' AUXILIARY
OF THE MINNESOTA STATE HORTICULTURAL
SOCIETY.**

J. M. Underwood, Lake City, President; Clarence Wedge, Albert Lea, Secretary.

Adopted Dec. 18, 1905, by the following charter members: J. M. Underwood, Wyman Elliot, J. P. Andrews, L. R. Moyer, A. W. Latham, Prof. Samuel B. Green, Frank Yahnke and Clarence Wedge.

Article 1—Name—This society shall be known as the "Plant Breeders' Auxiliary of the Minnesota State Horticultural Society."

Article 2—Object—The object of this society shall be to encourage the origination of horticultural plants adapted to Minnesota. A book shall be prepared and maintained by the society in which to register new fruits, trees and plants that have shown by performance their worthiness to be so registered.

Article 3—Membership—Any member of the Minnesota State Horticultural Society who is engaged in originating new varieties of trees or plants may become a member upon application to the secretary of this society, there being no membership fee. Membership is to terminate with that of the Minnesota State Horticultural Society, and with the occupation above stated.

Article 4—Officers—The officers shall consist of a president and secretary, holding office one year, and elected annually during the winter meeting of the Minnesota State Horticultural Society.

Article 5—Meetings—The society shall hold two regular meetings, annually, to be called by the president at the time of the meetings of the Minnesota State Horticultural Society.

Article 6—It shall be the duty of each member of the society to make a report of the work he has done during the year, the same to be made at the winter meeting of the society on blanks provided by the secretary.

Article 7—Quorum—Ten members shall constitute a quorum at any meeting of the society.

Article 8—Amendments—Amendments to the constitution may be enacted by a two-third vote of the members present and voting at any annual winter meeting.

Secretary's Corner.

NEW MEMBERS FOR 1906.—Have you sent in your new member yet for this year? The membership list is growing steadily, but to reach the maximum desired this year it will be necessary for YOU to secure one new member. Which one of your neighbors will it be?

PREMIUM BOOKS FOR SECURING NEW MEMBERS.—The little society folder gives on page 6 a list of premium books offered for securing new members. There are certainly a number of these books that everyone engaged in horticultural pursuits in this region should be the owner of. Some additions have been made to the list this year. Please look it over with care and select what you need, and then "get it."

CALL AT THE OFFICE FOR REPORTS.—The report for 1905 is ready for distribution to the 1906 members. It is sent by mail or express to those living at a distance, but any living in or about Minneapolis are requested to call at the office for a copy. It will be secured in this way in better condition than if sent through the mail, as well as saving the society the postage of 17 cents each, which is no inconsiderable amount when the number to be sent out is considered.

UNIVERSITY APPLE DOING WELL.—The University apple is proving to be quite reliable. The tree is a vigorous, healthy grower, seems to be hardy as Patten's Greening, and is an early bearer. The fruit is of good size and form, and of fairly good quality. It will keep until the middle of January in an ordinary cellar. While the fruit is not so large as that of Patten's Greening, and I doubt very much if it will ever prove as valuable, yet it is a very desirable addition to our list of cultivated fruits.—SAMUEL B. GREEN.

THE NORTH DAKOTA HORTICULTURAL SOCIETY.—Mr. A. J. Philips, of West Salem, Wisconsin, by invitation was present at the annual meeting of this society, which was held as a part of the general gathering of societies at Fargo under the auspices of the Grain Grower's Convention. Mr. Philips reports a very large attendance at all of these joint meetings. In the horticultural program he spoke of the "Pioneers in Northwestern Horticulture." At the annual election Prof. C. B. Waldron, who has heretofore been secretary, was elected president, and O. O. Churchill, assistant in the agricultural department, Agricultural College, Fargo, N. D., secretary.

SOUTHERN MINNESOTA HORTICULTURAL MEETING.—The Southern Minnesota Society held its annual meeting, as planned, at Albert Lea, on January 22 and 23. Mr. F. H. Nutter went from Minneapolis to this meeting to talk Monday evening on the subject of ornamental planting. The program included many topics of practical interest, several by parties at a distance. Mr. Clarence Wedge presented the subject of the possibilities of seedlings and others followed in the same vein. Nearly \$50. in premiums was offered, to be paid in nursery stock contributed by the various nurseries in that section. Full details of this meeting are not at hand at the writing of this.

QUEEN VASHTI.—This is the title of a book being written by our mutual friend, Mr. A. J. Philips, West Salem, Wis. It is practically an autobiography of a Guernsey cow, written as a companion piece to "Black Beauty," but this preliminary notice has a fitting place in our columns from the fact that he

has much to say in the book about the pioneer horticulturists and pioneer horticulture of Minnesota. That the book will be very readable goes without saying to those who are acquainted with the versatility and peculiar genius of Mr. Philips. It is announced as ready May 1st next, and the sale price will be \$1.00. Address the author of the book for further information.

MODELS OF WEALTHY APPLES AT WASHINGTON.—In compliance with the resolution passed at the annual meeting a year ago, in December last Mr. Wyman Elliot sent a number of fine specimens of the Wealthy apple to G. B. Brackett, Pomologist, Department of Agriculture, Washington, from which models were to be made to be exhibited there with the models of other varieties of apples from this state. It will be remembered that prior to this time, while the Wealthy has been shown with the models of fruits from other states, through oversight it had not appeared with those from Minnesota, even though this is the state of its origin. This oversight has now been corrected.

CONSTITUTION OF THE PLANT BREEDERS' AUXILIARY.—The constitution of this auxiliary, from which so much is hoped in hastening the development of fruit growing in the northwest, has been finally revised and appears in this number of our monthly. Any member of the horticultural society actively engaged in any line of work looking to the improvement of horticultural plants in this region may become a member of this auxiliary upon application to Clarence Wedge, Albert Lea, Minn., secretary of the auxiliary; or applications can be forwarded to this office if preferred and will reach the secretary in that way. A study of the constitution will indicate clearly its purposes. There will, of course, be some details to work out as to the methods of operation, the necessity for which time will indicate. Send in your name without delay for affiliation with this auxiliary.

VALUABLE TREES ON PYRUS BACCATA STOCK FOR SALE.—There is a great deal of interest just now in the experiment being carried on of grafting our standard varieties of apples on the Pyrus Baccata root, the point of union being at the crown, just at the surface of the ground. The State Experiment Station has on hand now between three and four hundred of these trees of hardy varieties, averaging about four feet in height. About two-thirds of these trees are Duchess, Wealthy and Patten's Greening. They will be sent out in lots of twelve—no more and no less than this number in each lot—at the uniform price of \$2.00 per dozen, with no extra charge for packing. They must go by express at the expense of the buyer. Each order will be made up of an assortment (choice to be made by the station) all of which will be valuable as orchard trees. As they are intended for experimental purposes, they will only be sent to those who indicate in their order for them their willingness to report occasionally as to their success. Orders should be directed to Prof. S. B. Green, St. Anthony Park, Minn.

ANNUAL MEETING OF THE MINNESOTA STATE AGRICULTURAL SOCIETY.—This meeting was held at the Nicollet House on January 9, 10 and 11, last. A very good program had been prepared, and the attendance, especially on the second and third days, was excellent. Cattle and hogs and tuberculosis and such matters occupied the attention of the meeting very largely. Nothing of a horticultural character was found on the program. The election on the last day resulted in the re-election of all the old officers, which speaks well for the present management of the state fair. Mr. J. M. Underwood succeeds himself as a member of the board for another three years; and since this meet-

ing his appointment as superintendent of all the departments grouped in the Agricultural Building has been announced. A number of important resolutions were passed at the meeting, one favoring the "parcels post," and one condemning the system of distribution of garden seeds through the members of congress, and one favoring reciprocity in matters of commercial relationship. All of these passed by a large majority after a little discussion.

THE WESTERN HORTICULTURAL SOCIETY.—This is the name of the society whose work includes the provinces of Manitoba and Assiniboia and other northwest territory, having its headquarters at Winnipeg. The society is to hold its annual meeting in that city on February 14 and 15. Will any of our members be in or about Winnipeg at that time? Credentials would be furnished to any such to represent the Minnesota society. The annual report of the Western Horticultural Society reached this office a short time since. Its contents cover the subject of fruit growing as well as the culture of trees and ornamental shrubbery and plants within the region named. Copies are given to members, and any one may become such by the annual payment of \$1.00. Address George Batho, Secretary, Box 1310, Winnipeg, Manitoba. The volume will be found very interesting reading to those who would know more of the horticultural development of that country. The association has a membership of about two hundred. Other kindred societies meeting in the same place at the same time makes this a good opportunity to get information as to that region.

PLANT APPLE SEED FOR THE NEW SEEDLING APPLE PRIZES.—The supplement accompanying this number gives the details in regard to the five new prizes of \$100. each offered by the society for seedling apples. It is hoped that a very large number of the members will enter into this competition, securing seed from the society or from some other available source, and take a part in this interesting and helpful work. It will be noted that there are two blank applications provided in this supplement, one to be filled out and retained as a record and the other to be sent to the secretary of the society. A large quantity of these supplements will be printed, and they can be had upon application to the secretary. A good use to make of these would be for the members to put them in their letters when writing to any person who would be likely to be interested. It is not necessary even to become a member of this society to enter into this competition, though it is very desirable that competitors should be members and continue so in order to keep in full touch with what is being done in this way. Records of progress as to this contest will be noted from time to time in the "Secretary's Corner."

"NEW CREATIONS IN PLANT LIFE."—This is the title of an inspiring book by W. S. Harwood, it being, as stated on the title page, "an authoritative account of the life and work of Luther Burbank." The writer was evidently in close touch with Mr. Burbank and his home in California, and the book he has written is an eloquent recital of first, the life of the man; second, his achievements; third, the methods of work by which he has brought these about. It is a fascinating book and, while clothed in beautiful and often eloquent words, carries with it an air of convincing truthfulness that impresses the reader with the immense importance of the work being done and the vital interest taken in it by Mr. Burbank. Every person interested in the new movement for the improvement of northwestern fruits by the growing of

seedlings or who desires to be better informed as to what is being done in the way of new creations in plant life should secure an opportunity to read this work. It ought to be in every public library in the state and accessible to all. It is a volume of 368 pages, very handsomely illustrated. It can be purchased of the publishers, The Macmillan Co., 66 Fifth Ave., New York City, for \$1.75, handsomely cloth bound.

ADDITIONAL INSTRUCTION AND EXPERIMENT IN FORESTRY.—Prof. S. B. Green has prepared a bill which has been introduced in Congress by Representative Davis of Minnesota, and has received approval of Mr. Gifford Pinchot, Chief of the Federal Forestry Service. It provides for an appropriation by Congress of \$3,500 for each state and territory, \$1,500 of which is to be used for instruction in the agricultural colleges and \$2,000 for experiments in forestry in the agricultural and experiment stations. The money is to be used exclusively for instruction and experimentation in forestry, and the Secretary of Agriculture, by the terms of the bill, has the power to withhold the appropriation from any institution which he thinks is not properly using it.

It is Prof. Green's idea that a measure of this kind should be made a part of the national forestry policy, and in this he received the hearty endorsement of the convention of delegates of Agricultural Colleges and Experiment Stations that recently met in Washington, as well as of the American Forestry Congress which met in Washington one year ago.

The bill provides that the money used for this purpose shall come from the sale of timber in the forest reserves. It would seem as though no better use could be made of money derived from such source than to use it for the purpose of showing how forests may be perpetuated and made a continual source of wealth for the nation.

DEATH OF AMASA STEWART.—Word has reached this office from Miss Laura Stewart, of Lamarque, Texas, announcing the death of her father, Amasa Stewart, on January 9th, at his home at Lamarque, after an illness of about seven weeks. At the time of his death he was thought to be on his way to recovery but suddenly grew worse and passed quietly away.

Mr. Stewart was one of the earliest members of this society, having become connected with it in 1868, the second year after it was organized, and the same year with the writer of this. In 1895, Mr. Stewart was made an honorary life member of the society, though this was many years subsequent to his removal from the state. He changed his residence to Texas some twenty-four years ago. He was one of the pioneer nurserymen of Minnesota, and in honest endeavor to uncover the secrets of success in horticulture he did much to lay securely the foundation of our later advances. The few older members of the society now with us will remember him well, and the balance will know him as the originator of the Stewart Seedling currant, which has been very generally planted in the Northwest.

Mr. Stewart leaves four children, George Stewart, of Dennison, Texas; Mrs. T. G. Thomas, of Houston, Texas, and Mr. William Stewart and Miss Laura Stewart, of Lamarque, Texas. We revere the memory of this true hearted and most honorable pioneer in Minnesota horticulture. A short biography of Mr. Stewart and portrait will be found on page 129, Report of the Society for 1896.

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VIEW AT MINNESOTA STATE EXPERIMENT STATION.
Near Horticultural Hall

THE MINNESOTA HORTICULTURIST.

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No. 3

Trial Stations, 1905.

CENTRAL TRIAL STATION, ANNUAL REPORT.

PROF. S. B. GREEN, SUPT.

The season of 1905 was, on the whole, favorable for vegetation, although the average of temperature for the season was rather low, and, in consequence, some plants failed to reach their best development. The orchard and garden crops were good.

At the experiment station the new orchard, which we sometimes refer to as the "model orchard," bore very good crops of fruit. This orchard is in excellent condition, although not located in a specially favorable place.

Among the new or comparatively new varieties that have done especially well this year are Brett No. 2, which makes a fine, large, vigorous tree and is very productive; the fruit is red in color and of fairly good quality. It is not, however, so handsome a fruit as the Brett No. 1, but I think the tree is perhaps more reliable.

A number of years ago we obtained (I think from Peter Gideon) some cions of a variety which he called No. 33. This variety is in appearance almost identical with the Wealthy, but it is an early autumn apple, ripening a considerable time before the Wealthy, and on our grounds it colors up to a beautiful red, which is seldom the case with the Wealthy on our soil. The fruit is very uniform, and the tree vigorous and productive.

The so-called Russian orchard, which was planted out about eighteen years ago, has, I think, yielded all the valuable results that we are liable to get from it, and believing this to be the fact I decided this last fall that we ought to get rid of a large number of very poor Russian apple varieties which were contained in it; hence we have grubbed out and burned several hundred large trees, many of them perfect so far as appearance goes, but generally bearing inferior fruit. It requires some little

will power to tear out a lot of trees that are in perfect condition that have been watched with so much interest as have these Russian varieties, but I think the room they occupy is far better planted in some standard kinds or in new varieties for trial.

Our seedling apple orchard has been increased by the addition of several thousand seedlings of good parentage.

The yield of plums was very light with us. I do not know just what this was due to, and for the first time since our Surprise plum came into bearing it failed to bear a satisfactory crop. I know that in many cases this variety has not been a good bearer, but with us it has been very reliable. Several thousand plum seedlings, two years old, have been planted in the seedling orchard.

Several kinds of sour cherries yielded fairly good crops with us this year, which is due largely to the fact that last winter was quite mild and the fruit buds were uninjured. We have tried many varieties of these sour cherries, including a large number of Russian sorts, and we think perhaps the Homer, Early Richmond, Suda Hardy, Kentish Morello and Wragg are about as reliable in this section as any.

Raspberries yielded a fairly good crop, and I would call special attention to the desirability of the Minnetonka Iron Clad among the red kinds. Of the new black varieties the Cumberland was a great disappointment, since from its good record in other sections we had been led to look upon it as being of great promise here. The chief trouble seems to be that its canes are liable to rust badly. Our Ancient Briton blackberry as usual produced a fine crop. Our Snyder blackberries made a strong growth of wood as usual, and as usual produced an inferior crop.

Some of the hybrids between the blackberry and the dewberry which were produced several years ago by the late N. K. Fluke, of Davenport, Iowa, are of much interest, and one of them is so productive that it may prove to have some commercial merit. In habit they are midway between the dewberry and the blackberry. That is, they hold their fruit well off the ground and yet are easily laid down. Should we find something of a productive character among this lot it may prove a great addition to our list of cultivated fruits.

As usual we have raised about fifty varieties of potatoes. This is a crop that is arousing considerable attention just now from the fact that there have been such serious losses in various parts of Minnesota from blight and rot during the past few years.

While we are able to combat both these diseases very successfully, by proper cultivation and spraying with Bordeaux, yet the general belief among the most progressive experimenters today is that we are most liable to get relief from these troubles by the breeding of resistant varieties, and in our test of new varieties of potatoes we have in mind specially the resistance power of these diseases. The varieties that have proven most desirable during the past year, that is, have yielded a good crop of potatoes and had clean vines, are about as follows: California Russett, Golden Russett, Carman No. 1, Early Market, Eureka Extra Early, Acme, Rural New Yorker, Irish Cobbler and White Mammoth.

About 800 seedling potatoes have also been raised this year. These are seedlings from some of our most resistant kinds. Some crossing work has been done with potatoes, the object of which is to see what can be obtained by crossing our ordinary kinds with *Salanum Commersonii*.

About fifty seedling peonies flowered this year for the first time. The most of these are four years old. Among them were a few kinds of considerable merit, which were much admired at the summer meeting of the horticultural society.

Among the newly introduced shrubs of desirable hardiness we have raised the following for distribution:

- 1,000 *Crataegus rotundifolia*. Fine hardy Hawthorn, desirable for hedges and for single specimens. Thorns long, flowers white, fruit deep red and freely produced.
- 3,000 Burning Bush (*E. maackii*). Best European form. While this resembles in appearance the kinds we have formerly grown it is much more fruitful.
- 50 Jersey Tea, *Ceanothus americana*. This wildling could often be used in our shrubberies to advantage.
- 1,050 *Viburnum tomentosum*. Hardy flowering shrubs with clusters of white flowers, followed by black fruit. A valuable addition to our list of hardy shrubs.
- 137 High Bush Cranberry, (From Mts. of Pekin). Foliage deep dark green color and deeply wrinkled, more graceful in habit than our native form.
- 175 Russian Olive. Best small tree with whitish foliage; gives fine effect.
- 100 Norway Poplar. A fine poplar much like the Carolina poplar, but a stronger grower.
- 45 Cut-Leaf Elder. American form; hardy vigorous and graceful; not the common form and much more desirable.
- 1,000 Dwarf Golden Willow. Fine dwarf form. For shrubberies a decided improvement on the Russian Golden Willow.

- 40 Thurlow Willow. A very excellent drooping willow.
50 Blackish Willow (*Salix nigricans*). New, large shrub with round leaves, vigorous in habit; resembling the cherry; desirable.

Of seedling fruits we have raised 14,000 apple seedlings, 4,000 plum seedlings, 400 grape seedlings, 2,000 *Pyrus baccata* seedlings. These will be distributed through the general nursery trade.

Our work of growing the standard kinds of apples on *Pyrus baccata* stock is being continued. The results reported in previous years have been confirmed, and I can see no reason to think that the union of most of our varieties with this stock will prove other than permanent and satisfactory. There are, however, some varieties that do not take well with it.

The Beta grape, which has been referred to at considerable length in previous reports, is still doing well. It is a vigorous growing vine that produces a large amount of fruit each year. This vine is so hardy that it is not at all necessary to lay it down in winter. We are making a special point of raising seedlings from this class of vines.

EXCELSIOR TRIAL STATION, ANNUAL REPORT.

A. B. LYMAN, SUPT.

Fruit trees came through the past winter in number one condition, and in the spring they gave promise of a large crop. The crop, however, was but medium, being reduced by unfavorable conditions later. The apple crop was profitable because of good prices, nearly all varieties bringing as high as \$3.00 per bbl., and we are able to get \$5.00 per barrel for the winter apples we have on hand.

These wet seasons are favorable to blight, and there was more or less at nearly all points. Trees that blight badly one season often recuperate another season and bear good crops of fruit. The Yellow Transparent has blighted very badly and ought not to be planted except in the most favorable locations.

The forest trees as well as the apple trees held their leaves much later than usual this year, yet we find that the apple trees have well ripened wood and are in good condition for a Minnesota winter. Perhaps this late shedding of leaves was due to the absence of early killing frosts. Peterson's Charlamoff, although very hardy, is not proving of value for the commercial orchard; it is not productive enough. Scott's Winter seems to be

below the standard of hardiness. We have four Malinda trees that were planted some nine years ago that bore heavily for the first time this year.

The original Evelyn tree (a Wealthy seedling), taken October 26th, 1905
after fruit was gathered.]

As winter apples, we have on hand Northwestern Greening, Malinda and Scott's Winter, also varieties of our Wealthy seedlings; the latter, we think, are superior both in tree and quality of the fruit, and there is no question as to their keeping. Last January we sent a few of the Evelyn apples to the U. S. Pomologist, at Washington, D. C., and they reported it as "An apple of superior quality that would make it worthy of cultivation over a wide area."

Some years ago Mr. Andrew Wilfert, of Cleveland, Minn., sent us a few scions of the Wilfert apple, and we grafted them on a crab tree, and this year the tree bore nearly one-half bushel of apples. The fruit is very much like the Plumb Cider and not as good a keeper as we expected.

Several have written us regarding the Minnetonka apple, as this trial station is near Lake Minnetonka, where this apple is supposed to have originated. I must answer that we have not this variety on trial but will add that some eight years ago a

great many were sold in this locality. They are proving annual bearers and are productive, but unfortunately the fruit is identical with the Longfield, a variety that this society dropped from the fruit list last season.

The twelve trees received last spring that were grown on *Pyrus baccata* stocks were planted as directed, and they made a very good growth, those of deep planting and those of shallow planting showing no difference. They were planted on a south slope, and the soil is black, with a clay sub-soil.

Mr. Older: I notice Mr. Lyman says the Minnetonka apple is identical with the Longfield. Down at our place it is red like the Wealthy.

Mr. Merritt: Why has the Longfield been dropped from the fruit list?

The Chairman: If you will not stop to discuss it I will tell you. Generally it has proven too small. As I remember it, it is not entirely off the list.

Mr. Lyman: We had a few, and it is very unprofitable.

The Chairman: It is not an especially long lived tree as a rule. My impression is we have not dropped it entirely. The Longfield is still on the list, "Valuable for some locations."

Mr. Busse: I would like to ask Mr. Lyman about the seedlings of the Wealthy, whether they are subject to blight, or whether they are worth planting in a commercial orchard.

Mr. Lyman: On the whole they are a lot of seedlings that are attracting a great deal of attention because they are panning out well. We have propagated four or five varieties that we thought had merit, and they are trees that rarely blight. There are few in the whole lot that do not blight some, but as a rule they do not blight to speak of.

The Chairman: I was out at Mr. Lyman's place with Mr. Latham lately, and those seedlings look very promising. He has a wonderfully good soil, better than Mr. Busse and the experiment station have got. His seedlings look very nice indeed.

GLENCOE TRIAL STATION, ANNUAL REPORT.

A. H. REED SUPT.

Late in April I was notified for the first time that a trial station had been established at Glencoe, accompanied by the following letter and instruction.

"Conditions to be observed in planting and caring for *Pyrus baccata* budded trees, twelve in number, sent to each trial station of the Minn. State Horticultural society, spring of 1905.

1. Plant not less than sixteen feet apart and deep enough so that when the ground has settled they will stand one or two inches deeper than they stood in the nursery."

2. Cut back so they will branch to form a head not higher than two feet from the ground and do no severe pruning thereafter.

3. Give the ground good cultivation throughout the entire season and do not mulch at all.

4. Number and keep a record of each tree, showing year of first blossoming and of the first fruitage; annual growth and amount of annual fruitage; injury by blight, disease or insects or other cause; and with the annual report of your station make a special report of these twelve trees showing all of the above facts as to each tree, reporting also as to weather conditions for the year.

5. The first annual report after planting state any important facts pertaining to location, where planted, as character of soil, slope of ground, protection from winds, elevation, etc.

6. Do not spray until instructions are sent out thereto, as the purpose is to make this experiment in as many essential particulars as possible a uniform one."

The trees arrived in fair condition, three Patten's Greening, three Hiberna, two Charlamoff, two Wealthy and two Duchess. My record reads as follows. "Received and set about April 25, 1905. Set in furrowed row, running southeast and northwest, ground slanting to the north, on new land cropped in 1904 to beans; soil, loam with clay subsoil; set about six inches deep; April, May and June very wet; July and August but little rainfall. Put zinc labels furnished on them from one to twelve. No. 8, Charlamoff, June 15th discovered dying, and Aug. 18th, dead. Most of trees made growth of from twelve to eighteen inches. The twelve trees were budded on *Pyrus baccata*."

I also received six seedlings from Mr. Elliot's place, from Wealthy seed, fertilized with the Ben Davis; set on same nature of land and grew fairly well. I look for a much more vigorous growth next season.

This has been an unusual year for blight, nearly every variety blighting, commencing early in June. I commenced to use the knife freely on some of my trees, not only cutting off the blighted twigs, but all small limbs and sprouts, and where I did thorough work in trimming the blight stopped. I am satisfied that blight is caused by over-growth of foliage, as every tree that had an over-growth blighted badly, and those making but little growth did not blight, even the Transcendents.

When such an over-growth is produced upon apple trees, the roots are not sufficient to supply the necessary sap or root food; hence, nourishment fails to reach the topmost ends of the new growth; consequently they turn red and wither. My experience

the past season has thoroughly convinced me that it is not the hot sun or any insect that causes blight.

View in A. H. Red's orchard, at Glencoe, Planted in 1900.

This has been a prolific season for the fruiting of apple trees. My most prolific bearers were the Hibernals; while but five years set they were loaded with apples to that extent that many limbs were bent to the ground. My Patten's Greenings were the next best. Trees of the Wealthy variety in my nursery, only four years' growth from root-grafts, were loaded with apples. One small tree produced thirty-five good sized apples.

One thousand two-year old Concord grape vines set out in May have all lived and made heavy growth. Also cherry, pear and quince trees set last spring have lived and done well.

I am not in love with spraying fruit trees. I sent to New York state and got me an automatic sprayer, supposing that by spraying I would have fruit in abundance. Where I sprayed I got but little fruit, and where no spraying was done there was plenty of fruit.

JEFFERS' TRIAL STATION, ANNUAL REPORT.

DEWAIN COOK, SUPT.

We stated in our midsummer report that the Florence and several other varieties of crabs had set for a full crop, but the apple scab continued to such an extent that it took practically all the crab apples but Whitney No. 20, which we class as a small apple. They bore a fair crop of the finest Whitneys we ever grew.

Our apple orchard the past season has been practically free from blight, only barely enough of it in places to be noticeable. We attribute this state of affairs largely to the fact that we have

our orchard and windbreaks trimmed up so that the air can circulate freely at all times through the orchard.

The apple crop was large as a whole, but the most prolific of the large varieties was the Duchess. It seems to be the one variety which we can rely upon for a crop year after year.

We began selling our Duchess apples on August 5th and kept our local market supplied with them until Sept. 27th, making the season of the Duchess fifty-three days. Okabena bore heavily upon trees that did not overbear the previous season; they were marketed with the last of our Duchess.

Patten's Greening bore its usual good crop. The fruit hangs well to the tree. We begin to market them when the Wealthys are all gone, and consider this one of the most valuable varieties.

The Cross (413) overbore, and the fruit was rather small for market. The Malinda also set very full but scabbed so badly that it had no market value. Peerless set for a light crop, but it also scabbed badly.

Winter scene at Jeffers' Trial Station.

The Northwest Greening, top-worked upon the Virginia crab and the Hiberna apple, gave us a fine crop. It is the most promising winter apple we have growing.

One Scott's Winter tree, set twelve years ago last spring, gave us a barrel of small but perfect fruit. The Anisim, or Red Anis, set twelve years, bore for the first time. It attracted quite a bit of attention in October by its brilliant red color and its fine eating qualities.

We have the Yellow Sweet under three different names. It

proves to be a shy bearer and fruit very perishable, and we do not consider it of any value.

The Wealthy gave us only a light crop. We had a frost on the morning of May 27th which we think reduced the crop of that variety.

The Antonovka bore a fine crop which was entirely free from scab. It appears to be a valuable variety for this section. Blushed Calville is another variety that promises to be valuable. It is of large size and bears well. It is a few days earlier than the Duchess.

The Breskovka bore very heavily. We have had three trees of this variety in bearing about twelve years and find it one of if not the most productive variety grown at this station, but the fruit is of only medium size and the quality is nothing extra. It is a little earlier than the Duchess, but the fruit does not sell very well.

Yellow Transparent bore a very good crop. We consider it our best extra early variety. Hibernial bore fairly well, but we can only market the fruit at a reduced price.

We had in our apple orchard considerable of what is known as the brown rot, or ripe rot. It appears to be the same disease, or rather fungus, that has ruined so many of our plums for several seasons. It was first noticed on some of our Duchess apples, but the Patten's Greening was affected the most. This rot seems to be a new danger here that threatens the apple industry. One grower here declared that it was the blight, which, after nearly ruining his apple orchard, was also destroying his apples.

As to plums, the following varieties gave us a good crop: Wolf (freestone), Wolf (clingstone), Wyant, Paul Wolf and Forest Garden, the freestone Wolf being overloaded.

The shothole fungus was very bad, causing much of the plum fruit to be undersized, some of the plum trees being nearly bare of foliage at the time the fruit was ripening.

The Surprise, Aitkin and Weaver we consider worthless for this section on account of non-productiveness. We have had trees of these varieties of bearing size from five to fifteen years and where we ought to have had many bushels of the fruit we have hardly been able to get specimens. Some of the other varieties that have failed almost as completely are Rollingstone, Cheney, Mankato and Ocheeda. I have been growing these varieties from ten to fifteen years and have never had the

Ocheeda bear anything like a crop; the others have all given us one good crop and one or two very small crops, but most seasons they were about a total failure.

After a hail storm at Jeffers' Trial Station.

The kinds that have proved reliable bearers for a long term of years are DeSoto, Wolf (freestone) and Wyant. I might also add to this list Rockford and Forest Garden. Most of our largest and best selling plums cannot, it seems, be relied upon always for a large crop, although they are rarely a total failure. The large varieties which are referred to here are the Hawkeye, Stoddard and the clingstone Wolf.

The Compass plum set for a fair crop, but the fruit all rotted upon the trees before they ripened. The Terry plum, formerly called Free Silver, is a most promising variety. It is the largest pure native variety that I have fruited.

Of the Japanese hybrids, the Bursota has proven unproductive; the Cheneybot gave us a fine crop on grafts set three years—it seems to be a Cheney very much improved. The Eureka and Emerald are also very promising. The former is large, early and of elegant quality, the Emerald is late, very large and good; both appear to be as productive as any of the large varieties.

The plum gouger did not show up the past season; the curculio did some damage but less than usual.

Black raspberries were all a failure here from cane rust, or anthracnose; but the reds, Turner, Cuthbert, Brandywine and Superb, all gave us a fine crop. They had no winter protection.

Our blackberries, Snyder and Stone's Hardy, bore very well.

but the birds got the most of the fruit. We like the Snyder best.

We have had no drouth the past season but, rather, too much rain all the way through, heavy dews, I believe, every night and some very hot weather—just the weather, we believe, favoring the spread of fungous diseases and blight.

We believe the apple and other fruit trees at this station are going into winter quarters in very good condition and that conditions are favorable for a crop of fruit next season. Heavy late rains have filled the sloughs and thoroughly soaked the ground.

LA CRESCENT TRIAL STATION, ANNUAL REPORT.

F. I. HARRIS, SUPT.

A combination of circumstances has prevented me from attending the society meetings during the past two years, and for this reason, and a partial failure of crops, I could not muster up enough enthusiasm to send in the regular reports.

In looking over the reports from other stations I find that my experience has been about the average, so will not go into details at this late day. The greatest obstacle to successful fruit growing so far encountered has been excessive and long continued rainfall. These conditions were favorable for the growth of fungous diseases and prevented effectual spraying, and the results have been disastrous and discouraging.

The season of 1905 was almost a duplicate of the two preceding. A cold, backward spring, with continuous rains during the spring and summer months, caused more than one-half the fruit crop to drop before maturity, and the remainder was largely of poor quality in the experimental orchard. This was notably the result in the plum orchard, which bloomed in profusion but failed to mature any perfect fruit.

The crop of small fruit was below the average. Strawberries commencing to ripen late ended at the usual time, so were a short crop and of poor quality. The Senator Dunlap is the only one of the newer varieties tested that proves worth general cultivation. After two years fruiting on a variety of soils and locations I have no hesitation in pronouncing it the best berry for either home use or the market. This and the Warfield are the leading varieties and are enough for the commercial grower. Bederwood and Splendid are still popular for home use and nearby market but too soft and light colored for shipping. A number of others have been tried and found wanting and have been discarded.

Residence of F. L. Harris, La Crescent.

Currants and gooseberries were a very light crop. Raspberries where winter covered, nearly a full crop. Leading varieties are Cuthbert, red, and Cumberland, black. Grapes yielded a small crop of poor quality. Apples in the commercial orchard where properly sprayed produced a fair crop of good quality, but where spraying was neglected they were not worth gathering. Duchess, Wealthy and Patten's Greening were the leading and only paying varieties. A number of new varieties bore for the first time in the experimental orchard, but the fruit was so scattering and weather so unfavorable that spraying was neglected and in consequence the fruit was of such poor quality that it was impossible to judge fairly of its merits, and I am not ready to recommend any of them without further trial. Many that proved of inferior size have been removed and replaced with standard varieties. This work has been going on for several years, and at present over one hundred large trees are marked for removal. Considerable has been accomplished by pruning and thinning, but much remains to be done. The trouble has been a scarcity of suitable land, and in consequence trees were set too thick.

Only a very few trees were affected by blight, and no injury done of any consequence. Trees ripened up well and are well filled with blossom buds, and the outlook for a crop is the best for years.

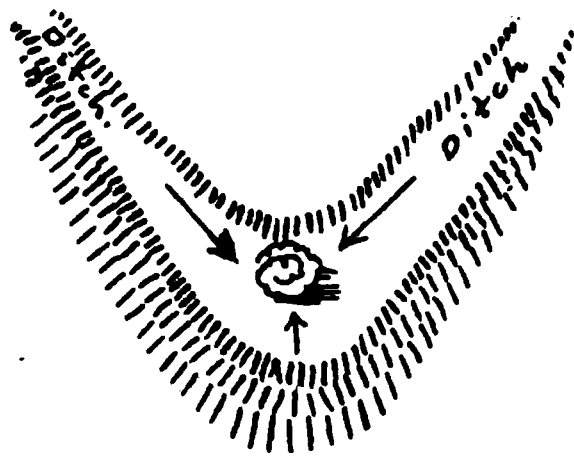
The *prunus baccata* trees received for trial arrived very late and were set in a cornfield and so made only a small growth, but are all in a healthy condition except one Hiberna, which proved dead.

MONTEVIDEO TRIAL STATION, ANNUAL REPORT.

LYCURGUS R. MOYER, SUPT.

The reports of this station have already called attention to the excellent results obtained by hill-side planting, when care is taken to construct and keep open ditches running diagonally up the hill, so as to gather up and conduct the water which plows down the hill during sudden summer showers toward the trees or shrubs. In this manner we have been able to successfully grow the Russian tamarisk on a dry hillside after it had wholly failed on level black prairie soil. A young orchard set two years ago in tough prairie sod on a steep bluff has done so well that we are convinced that the coming orchards in dry southwestern Minnesota are thus to be grown.

In setting an orchard on this plan a generous hole for the tree should be dug, and the sods taken from the hole should be used to form a permanent embankment on the down-hill side of the hole. In digging the ditches from the hole diagonally up the hill the sods are likewise to be used to raise an embankment on the lower side of the ditch, so that the tree when set will stand at the intersection of the two ditches, the ground sloping from every direction towards the tree. The following diagram will illustrate the plan:



Plan of planting tree in sidehill orchard.

The soil in the bottom of the ditches and on the top of the embankment must be kept carefully hoed, for your apple trees will not grow in a tough sod of perennial grasses, such as is sure to be formed on a wild prairie.

Blight was unusually prevalent in the apple orchards. The varieties most resistant to this disease are Peerless, Anis and Estelline. Among the worst blighters are Orange crab and Whitney.

The tests made at this station indicate that the following shrubs may be safely planted in southwestern Minnesota for landscape decoration, care being taken to give good cultivation:

<i>Elaeagnus angustifolia</i> (Oleaster).	<i>Crataegus flabellata</i> (Native Thorn).
<i>Shepherdia argentea</i> (Buffalo Berry).	<i>Amelanchier Canadensis</i> (June Berry).
<i>Syringa Josikaea</i> .	<i>Amelanchier Botryapium</i> .
<i>Syringa villosa</i> .	<i>Amelanchier alnifolia</i> .
<i>Syringa vulgaris</i> (Common Lilac).	<i>Prunus Americana</i> .
<i>Syringa vulgaris alba</i> (White Lilac).	<i>Prunus Americana nigra</i> (Cheney, &c.).
<i>Syringa vulgaris purpurea</i> (Charles X).	<i>Prunus pumila</i> (Sand Cherry).
<i>Syringa Chinensis</i> .	<i>Prunus pumila Besseyi</i> .
<i>Syringa Persica</i> .	<i>Prunus tomentosa</i> .
<i>Syringa Japonica</i> (Tree Lilac).	<i>Prunus Pennsylvanica</i> (Wild Bird Cherry).
<i>Lonicera Morrowi</i> .	<i>Prunus Virginiana</i> (Choke Cherry).
<i>Lonicera Ruprechtiana</i> .	<i>Prunus demissa</i> .
<i>Lonicera Tartarica</i> (Bush Honey-suckle).	<i>Prunus padus commutata</i> (May Day Tree).
<i>Lonicera Tartarica speciosa</i> (L. splendens).	<i>Prunus nana</i> (Russian Almond).
<i>Lonicera Tartarica parvifolia</i> .	<i>Rhus glabra</i> (Sumach).
<i>Lonicera dioica</i> .	<i>Rhus trilobata</i> .
<i>Caragana arborescens</i> (Pea Tree).	<i>Viburnum Lentago</i> (Sheep-berry).
<i>Caragana frutescens</i> .	<i>Viburnum Lantana</i> (Wayfaring Tree).
<i>Caragana pygmaea</i> .	<i>Viburnum Opulus</i> (Cranberry Bush).
<i>Rosa rugosa</i> .	<i>Viburnum Opulus sterile</i> (Snow-ball).
<i>Philadelphus pubescens</i> (Mock Orange).	<i>Cornus stolonifera</i> .
<i>Philadelphus coronarius</i> .	<i>Cornus alternifolia</i> .
<i>Philadelphus Zeyheri</i> .	<i>Pinus montana</i> Mughus (Swiss Mountain Pine).
<i>Philadelphus Lemoinel</i> .	The following are climbing vines:
<i>Philadelphus microphyllus</i> .	<i>Lonicera sempervirens</i> .
<i>Philadelphus Gordonianus</i> .	<i>Lonicera Sullivantii</i> .
<i>Berberis vulgaris</i> (Barberry).	<i>Ampelopsis quinquefolia</i> .
<i>Berberis vulgaris atropurpurea</i> .	<i>Ampelopsis quinquefolia Engelmanni</i> .
<i>Berberis Amurensis</i> .	

Now that botanists have settled their differences, as they did at the recent botanical congress held at Vienna, and have agreed on a standard nomenclature, it would seem that horticulturists and nurserymen might agree to be governed by it, and put an end to the present practice of each nursery naming things according to its own taste and fancy. Bailey's Cyclopedia of American Horticulture has now been published several years. It was prepared by scholarly men and describes about every variety of plant and shrub to be found in American nurseries and gardens. Why not try using the names given therein for a while and see how it works?

L. R. Moyer: I want to make the statement that the Montevideo station has been devoted almost wholly to the trial of ornamental shrubs. We have a little orchard, a very small one, nearly all planted with Russian apple trees that I received from the Iowa Agricultural College twelve years ago. Among those apples that were grafted the best was the Anisette, identical with the Duchess of Oldenburg, and the Anis, a small apple but entirely free from blight, and the Blushed Calville, which is an excellent summer apple, being about ten days earlier than the Duchess, although the tree unfortunately is quite a blighter.

Outside of the orchard the grounds have been planted with ornamental shrubbery. I do not know whether the word orna-

mental is a good one to use or not, but it is such things as are used along the line of landscape gardening.

Sarubbery and evergreens at L. R. Moyer's place.

The best of these shrubs are the lilacs, of which we have a variety. The best is the Japanese tree lilac (*Syringa Japonica*) of which we think a great deal. It blooms three weeks after the common lilac is gone. We have another that has no common name, the *Syringa Villosa*, which is also hardy and blooms three weeks after the common lilac is gone. Then we have the *Syringa Josikaea*, which also blooms later. Some of the *Syringa vulgaris* are very good ones. For instance, the Charles XII is an excellent lilac, and there are some other varieties I do not know anything about. We think a great deal of the bush honeysuckle (*Lonicera Tartarica*). One I received from Prof. Budd, the *Lonicera speciosa*, I do not think is named right. There are two or three varieties of bush honeysuckle, with the termination *Ruprechtiana* and *Morrowi*. Our experience with the *Philadelphus* differs from that of Prof. Hansen. He finds them to be tender, and we find them to be hardy and one of our most excellent shrubs. We have four or five species, and the nomenclature is mixed, and it would be hard to give their names. We think a great deal of the *Caragana* which we received from Iowa. We think a great deal of the snowball and of its original type, the high bush cranberry (*Viburnum opulus*), one of the best shrubs we have. I do not think of anything more I can add to this report.

I might speak of the *Rosa rugosa*, one of the best shrubs we have.

Mr. Nils Anderson: Will the *Rosa rugosa* grow without covering?

Judge Moyer: Oh, yes, it will.

OWATONNA TRIAL STATION, ANNUAL REPORT.

THOS. E. CASHMAN, SUPT.

As time advances we realize more and more that the Minnesota legislature in laying aside the small tract of land on the state farm at Owatonna for experimental purposes acted wisely, also that the late E. S. H. Dartt, who was superintendent of the Owatonna station from its inception until his death, fulfilled his mission. The seed that he planted was of the hardiest varieties, selected from apples grown in his orchard, and while he might have produced more large, fine colored apples had he not planted so much crab apple seed yet we have a great many varieties from crab seed that bear large and good marketable apples. I am confident that a number of them will win a place among our leading commercial sorts.

Thos. E. Cashman, Owatonna.

The trees from the Duchess and Wealthy seed are showing up best of all, and I am pleased to be able to report that the

Wealthy seedlings are much hardier than the parent tree and not nearly so susceptible to blight. The thinning out of inferior and blighting sorts last year proved very beneficial to the ones showing most promise, as the heretofore badly crowded condition made the fruit very small and inferior, and varieties that we supposed had little or no value bore this year nice, large, highly colored apples.

There has been very little planting done at the station since my appointment for the simple reason that all the suitable land was already occupied. Prof. Green sent me some new varieties last spring to experiment with, and twelve trees budded on *Pyrus baccata* roots were received from the Minnesota Horticultural Society. In order to make room for them, we dug out a number of trees which showed little promise. The majority of the trees received from the society have made a growth ranging from two to twelve inches. Part of the trees were planted twenty inches deep and the balance three inches deeper than they came out of the ground. I found that the deepest planted trees started growing the earliest in the spring and made the most satisfactory growth throughout the season. The varieties received were Patten's Greening, Charlamoff, Duchess, Hibernial and Wealthy.

The past season I broke up a low spot of ground in the northeast corner of the station, dug out the quack grass, which, by the way, had full control, and put in tile drainage. This will make a good spot for future experiments. This winter I intend to graft from some of the best varieties originated at the station and will thus have an opportunity of learning more about them when planted at regular distances. If this does not meet with Prof. Green's approval, I will follow any other method that he may suggest.

Out of the 1,500 new varieties growing at the Owatonna station when I was appointed superintendent, about 800 have been cut out, and with proper care there is no doubt but what we will be able to turn out a number of trees that will be equal if not better than any of the best known kinds. The chief thing to be determined from the tree now is quality of the fruit and the length of time it will keep.

The bad blighters have all been disposed of, and there is not a tree in the station now that will blight to amount to anything if not infected by blighters from other orchards. During the past two years we have sprayed the trees several times, which de-

stroyed the majority of the insect pests, and this year's crop of fruit has been free from scab and worms and of very good quality.

I have kept our man Villwock at the station all summer with the exception of a few days, and part of the time we gave him other help. I made an exhibit of some of the best varieties of apples grown at the station at the last Minnesota state fair and also have an exhibit at this meeting. The apple crop, amounting to 154 bushels, was turned over to the School for Indigent Children. We would have had a much larger yield this year were it not for the fact that frost killed most of the blossoms on the late blooming sorts. I have paid out \$263.00 for the work done at the station this season. This includes the breaking up of the low ground referred to, digging out the quack grass and the tile draining. There are many varieties at the station that have not yet come into bearing, and I hope to be able to report good results from them at some future time.

PLEASANT MOUNDS TRIAL STATION, ANNUAL REPORT.

J. S. PARKS, SUPT.

A trial to determine the difference between apple or plum trees bearing in sod or in cultivated land has been going on for the last few years at this place. A number of trees somewhat scattered at the end of some long rows of apple trees were selected, the ground plowed and kept in hoed crops for the past four years. It has been found that the trees in the sod of timothy and clover have borne about twice as much as those in the cultivated ground. Several varieties such as Whitney's No. 20, Walbridge, Wealthy, Haas and others were included in this trial. The Whitney had six trees in a row, three of them in sod and three in the cultivated ground. Those in the sod have borne heavily every year, while those in cultivated ground have borne sparingly of a better quality of fruit. The same conditions have appeared with all the varieties in the plot. Plums set to replace the apple trees that died out have shown just the reverse—those cultivated bearing much better than those in the sod. Haas trees in the cultivated plot suffered worse from scab and death the last two years than those on the sod ground.

A lot of young plum trees top-worked two years ago made such a rank growth that many of them broke down at the union.

We tried pinching off the tops of the rank scions and saved all those thus treated—and they made a better and more symmetrical top.

A few top-worked half hardy varieties of apples, such as Baldwin, Northern Spy and others, on Virginia crab, three years old, have proved hardy so far and are doing nicely.

A lot of *pyrus baccata* used as stocks to graft and bud on have not proved satisfactory. They made slow growth and some blighted. We are not pleased with the experience so far. Our seedling bed, from seed of Wolf River fertilized on Tolman Sweet, two and three years old, presents a sorry appearance. Most all blighted tops that are dead show the strong characteristics of the Tolman Sweet in their make up, while seedlings of Wolf River fertilized by Tolman Sweet that have not blighted show the Wolf River blood in their make up, which never blights to speak of.

SAUK RAPIDS TRIAL STATION, ANNUAL REPORT.

MRS. JENNIE STAGER, SUPT.

The past fruit season was not an entirely satisfactory one on account of the cold, wet spring and summer. Strawberries started well in the spring, but when in full bearing and nearly ripe, presumably from need of moisture at the roots the fall before, suddenly whole fields of them were stricken and died in a day and night. Currants and gooseberry did well, although late in ripening. Raspberries, both black and red, had good crops. For red raspberries we depend mostly on the Turner. The Columbia also gives us a good crop of large berries but not firm, therefore not so good for market. We never lay our canes down. Our young apple orchard gave us plenty of apples and was entirely free from scab or blight; but plums, I am sorry to say, notwithstanding being well sprayed, rotted badly.

Most all of our flowering shrubs seemed to thrive even if the weather was cold and wet—and were covered with bloom. With the exception of some seven hundred peonies, a number of phlox and some columbines received from C. S. Harrison, of York, Nebraska, and a basket of greenhouse plants from Prof. S. B. Green, nothing new was planted this year.

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1. Mr. E. Cross.
3. Mr. Geo. A. Stager.

7. Mrs. E. Cross.
8. Mrs. Jennie Stager

I spoke about the strawberries in my vicinity, but on my own place there was not one that came through in nice shape except the Brandywine, and there was no blight or anything of the sort on that.

As to apples, we have a little orchard, only four years in bearing. We had a very high wind that blew over a number of trees. We had no blight in the orchard this year, and no scab except on the Longfield. Our currants and gooseberries did very well. We sprayed our plums, and they promised well, but we had such continuous rains through the season that when they were almost ripe they began to rot, and spraying would do no good with so much rain, and a great many rotted so quickly that we did not have time to take them off the trees before they were gone. I received a dozen trees grafted on the *Pyrus baccata*, and they made a very good growth. We have a

good deal of ornamentals at our place too. Raspberries turned out very well. I never lay them down, and yet we have enormous crops of Turner and Cuthbert. We tried to dig out the blackberries, but the Snyder will run along the fence, and we have as many as we had other years along the pasture fence.

I received from Mr. Harrison 700 peonies. I furnish a good many blooms to florists, and I put in over 700 peonies I received from Mr. Harrison. I also put in some of his new phlox. All kinds of perennial phlox are hardy without any covering, but at the same time it is better to throw some light manure over them in the fall.

I want to speak about the work Frank Randall is doing at the state reformatory. He is planting a large number of ornamental trees, and he has catalpa that are doing well. He has planted plum trees of seedlings. I don't think we ever had a superintendent at the reformatory that has done as good work as he does. Somewhere he discovered a wild grape that is a very large and fine grape and is perfectly hardy. He started a large number of vines and let us have some. They are not old enough yet to know what they will do. He started quite a number of grape vines, and they made a good growth this year. They don't require any covering. I thought I would speak of that because he is doing good work, and it may influence some others to do good work. (Applause.)

The Chairman: With reference to that hardy grape grown by Mr. Randall, it is probably identical with the Beta. It originated with Andrew Svelten, and has been referred to in the Horticultural Magazine from time to time. It is a rank grower, a heavy bearer and perfectly hardy.

WEST CONCORD TRIAL STATION, ANNUAL REPORT.

FRED COWLES, SUPT.

At the time we made our last midsummer report everything promised a bountiful harvest, all fruits had blossomed freely and looked most favorable. Strawberries, although promising a large crop, fruited lightly, and heavy rain hindered picking, although cool weather helped matters a great deal. Our favorite varieties are Warfield, Sen. Dunlap, Splendid and Lovett. These well known varieties are more profitable than newer ones that we have tried, and they take well on the market. For canning Warfield and Dunlap are considered the best.

Raspberries were all that they promised to be. Ohio did better than they have for several years. Older, Palmer and Loudon bore a good crop.

Blackberries were a good crop. Every one that had a few bushes had plenty of fruit.

Grapes were almost a failure—a few scattering bunches but nothing to speak of.

Plums. Wyant bore a good crop. We consider this variety one of the best for our location. The past three seasons it has given us good crops. De Soto and Wolf bore a light crop, and the fruit was quite scabby, especially that of the De Soto. Surprise bore no fruit this year, although the trees were healthy and vigorous.

Seedling phlox, at Fred Cowles' place

Apples were a light crop. Patten's Greening bore the heaviest crop of all varieties on our grounds and with very little blight. Hiberna bore well. We think more of this apple than we used to, as the tree is very hardy and the fruit is very good for culinary purposes. Peerless was a total failure in our orchard on account of the scab, but in a neighboring orchard of twenty trees there was picked about fifty bushels of apples. These were beautiful apples and sold for \$1.00 per bushel.

I have been trying the dust spray this year for scab, but I am not satisfied with the results; although our entomologist ad-

vised me to use the liquid spray, I thought I knew best. I gave it a thorough trial and could not see any difference in trees that were sprayed or were not. But I found the dust spray all right for the currant worm. I shall try the liquid spray another season and shall give the dust spray another trial also, as I believe that the time has come that we must spray if we are to raise good fruit.

A few years ago I set out a few seedling apple trees with great expectations. Two or three of these bore this year for the first time but, to our disappointment, small, inferior fruit. But we live in hopes for the future, and believe some one will find just the apple for the Northwest.

Evergreens have made a good growth this season, it being wet and cool and favorable for transplanting them. Farmers have commenced to see their value for windbreaks and are setting them out by the hundreds.

WRENSHALL TRIAL STATION, ANNUAL REPORT.

F. B. MC LERAN, SUPT.

At the last annual meeting, one year ago, I was informed that a horticultural trial station would be located on my farm near Wrenshall, twenty miles from Duluth on the N. P. R. R. To explain the need of a trial station at this particular point I will try to make you better acquainted with the conditions. About thirty miles from Lake Superior up the St. Louis River Valley is a height of land, or divide, which rises about 700 feet above the lake. The section between this divide and the lake has a climate that is governed largely by the lake winds and lake conditions. There is a material difference in the climate of this small section and of that just over the divide. It is in the very center of this section that Wrenshall Station is located,—twenty miles from the lake, ten miles from the St. Louis river.

Regarding the work at this station, I can only mention that undertaken, as no definite results can be obtained in one season. However, I hope at some later date to accomplish things that will be of interest and of value to us all.

I will not take space to list all the varieties set for trial, but if any one is interested enough to drop me a postal will be glad to mail them such list.

Last spring 150 trees, apples and plums, were set out. These included thirty varieties of apples and crabs, and twelve kinds

of plums. Six varieties each of currants, gooseberries, red and black raspberries were set out; also some grapes.

This stock comes from six different nurseries, and some from Prof. Green, some from Mr. Elliot, and the *Pyrus baccata* budded trees from the state experiment station also. These plantings thus represent nine different sources, which should bring out some interesting results as to their relative merits.

Forty different varieties of strawberries are growing here. These strawberries come from growers in New York, Ohio, Dakota, Michigan and Minnesota. Part are so-called "pedigree" plants and part those that are not. All have done exceedingly well the past season.

Every one of the 150 trees set by me last spring were still alive this fall. Of fifty trees set three years ago, forty-six are still alive and doing well. Two Duchess bore their first fruit this year. A test between the so-called "pedigree" strawberry plants and those commonly sold by nurserymen is under way. The growth of the present year show no choice, but an opinion cannot be formed until they come into bearing. Strawberries are being tried on sand, red clay and clay and sandy loam. The trees have never had any protection from the weather whatever. I do not believe in petting them. If they cannot withstand the climate, they must go. Wild bird cherries, choke cherries, high bush cranberries, dewberries, thimble berries, blueberries, strawberries, currants and raspberries grow wild here by the hundreds of acres. I shall do much experimenting with these wild fruits, as they are all hardy here. I have succeeded in grafting the tame cherry upon the wild cherry stock.

Snowballs, lilacs, peonies and roses do well and should be planted more largely about our farm homes. Trusting that future reports will be of more interest and assuring you I shall spare no pains in my efforts to accomplish things of some value, I close this my first report.

Mr. C. S. Harrison (Neb.): Do you graft the tame cherry on the wild?

Mr. McLeran: Yes, and make it live.

Mr. Harrison: You can graft them on the eastern bird cherry and make them live.

The Chairman: It has been done in this country, but it does not make a satisfactory stock.

Mr. McLeran: I attempted twenty grafts, and there were six that grew.

Mr. C. W. Merritt: Don't you lose the wild fruit by prairie fires?

Mr. McLeran: We have a good many, but that brings in the fruit.

A SEASON'S WORK WITH CHILDREN AND FLOWERS.**MRS. ANNA B. UNDERWOOD, LAKE CITY.**

Before taking up the topic assigned me, it may be well to review briefly some of the preliminary details leading thereto. Doing so may be of service to others interested in organizing improvement clubs, who with the practical methods of one club before them can adopt or modify or avoid entirely what may be of no use under other existing conditions. What will be outlined here will apply only to cities and towns of less than 5,000. Larger places must compete with those of their own size, engendering a spirit of rivalry that will force the residents to advance measures that will enhance the business outlook of the community. This is the work of the local "Commercial Clubs" and "Citizens' Leagues," who will, figuratively speaking, put the best foot foremost, hold rousing meetings of the business men and adopt measures that will attract some of the floating commercial enterprises that are in search of bonuses, etc., to tie them to earth, frequently for a temporary period only. The cities lacking this aggressive life in their midst soon sink to the level of what is commonly termed "dead towns" and very soon display all of the characteristics thereof: namely, deserted houses, empty, rundown business blocks, lifeless inhabitants, etc.

Activity among the citizens must be the keynote of effort in all places, large or small, in order to make the most of surrounding advantages and to improve conditions, for just so soon as activity ceases a place will surely retrograde and many of the inhabitants, not recognizing their own responsibility, will move to a "live" town.

The smaller cities, towns and villages will need to attain results through different methods. Their location may preclude the possibility of phenomenal growth, but they can foster the business interests they already have, and, above all, the schools, churches, public buildings, public grounds and homes can be kept in the best condition, so as to bring into the social and home-life of the residents content, even enjoyment, in their environment. These smaller places are fast becoming recognized as ideal for the true home life.

In order to accomplish this attractiveness, much personal effort is required. Individuals must assume responsibility, must feel that the general weal is their own concern and that they must cultivate an interest in affairs pertaining to the well-being of their neighbors. As some one has aptly said, "Whatever strengthens the attachment

which a person *feels* for the place of his residence tends to make him a better citizen; loyalty to country grows out of loyalty to home and friends."

About a year ago some of the earnest women of our small city were imbued with the idea that although nature had done much for us in the way of a most beautiful lake, surrounded by picturesque bluffs and valleys, which made a beautiful setting for the many homes, yet after the eye had absorbed the beauty of the distant surroundings and roamed nearer home, taking in the unattractiveness of some of the streets, the unkempt condition of our neighbors' yards—as well as our own—there was much found to offend the sight. Then began a search for information pertaining to our needs. Books, magazines and papers were read, but no detailed plan could be unearthed that might be applied to our particular case. We read much of the extensive operations in boulevarding streets, improving and adding to park systems, the passing of laws *compelling* compliance with recognized necessary improvements; but all was on a scale beyond us.

We found much to inspire us and to increase our determination "to do something." Here is what an M. D. had to say: "In cities, a park is an absolute necessity in order to furnish recreation of body and mind for those who are tired of city sights and sounds and wish to recuperate in the country without leaving town. It is a breathing place to the city and gives coolness and pure air in summer; it serves to relieve the dullness and monotony of paved streets and long rows of houses; it attracts the people and awakens local pride." Says the editor of "Garden and Forest:" "Trees and shrubs and flowers and grass are possessions of as real and practical value as are pure water, good drainage, fresh air, hospitals, schools and churches." "But the truest value of public parks is in the rest they give to eyes and mind, to heart and soul, through the soothing charm, the fresh and inspiring influence, the impersonal, unexciting pleasure, which nothing but the works of nature can give to man."

With words like these to encourage, our business meetings were the scene of lively discussions of what we had read, and a process of elimination was carried on. Our beautiful, broad, deep, clear lake of constantly changing water, our wide valley with abundance of trees and nearby streams, supplied us with pure air and park-like conditions. We really lived in a park. So we narrowed our line of observation and began to study conditions in detail and soon were nearly overwhelmed with unpleasant things. The unsightly appearance of portions of the lake front; the untidiness at the rear of

stores; the frequent mud holes in the streets; uneven sidewalks; noxious weeds along the roadside and in vacant lots; the rubbish of tin cans, bottles, boilers, crockery, etc., dumped beside a beautiful driveway (between two days); broken down fences, etc. There was so much that evidently should be done, and that at once, that we were almost discouraged before starting out on our crusade, for how could all this be changed with only a few apparently to work? However, after due reflection, we wisely concluded to lay our plans for only as much as we knew we could reasonably accomplish, remembering that there were other years before us. We had no funds to work with; our only resources, as one tritely expressed it, were "plenty of talk and a reasonable degree of influence," and we determined to work these to the limit.

We formed an organization of women with a membership fee of twenty-five cents per year. Men were admitted as honorary members by paying fifty cents. With this low charge, no one need stay away through lack of funds.

This gave us a small amount to begin with, and it was used to keep up the interest of our monthly evening meetings. For these we made up programs to cover an hour. We had two ten minute talks or papers; the balance of the time was used in three to five minute talks, with two musical numbers. We were prompt in beginning and closing, and if any one presumed on having much to divulge, requiring extension of time, he was informed that another evening was coming when he would be allowed an opportunity to continue. This promptness and strictness in carrying out the program, brought out quick, snappy, sparkling remarks that were always well received. Our aim was to bring as many as possible to their feet, and we were agreeably surprised to find that there were many who were doing a great deal of thinking and were only waiting for an opportunity to be lined up in battle array.

For one entertainment we engaged Prof. Samuel B. Green to give a lecture on "Street and Home Improvement," illustrated with stereoptican views. This awakened much interest and formed the basis of the discussion for the next regular meeting. Each program was always followed by a social hour, and these were pronounced by many to be the most instructive of all, for with a cup of tea or coffee and a wafer in hand—a glass of lemonade and a wafer in warm weather—it was so much easier to talk over and discuss matters with a few than to make a set speech to a hundred or more listening ears. It was truly pleasing to watch the groups in different parts of the room, and, passing from one to another to hear, "our

streets," "such a lovely place," "something should be done," "let us bring it up at next meeting," etc.

The executive committee procured a map of the city showing the streets, and then, house by house, mentally, went up and down both sides each street selecting one person who would likely to serve as chairman of a committee for that street. The streets running lengthways were divided by a certain cross street. Our idea, by this subdivision, was to assign to each committee an amount of territory that it could cover easily, exacting but a minimum of time. This chairman was empowered to form a sub-committee for his street of three to five members, as he thought necessary, for the complete surveillance of the same. These sub-committees were to meet and talk over the situation as they found opportunity, to interest the dwellers on their respective streets in the work of the improvement club, to take note of the attractive features as well as of the objectionable, to decide upon what their street needed most, etc. At the call of the executive committee, the chairmen of the various street committees met occasionally for the purpose of reporting progress—whether mud holes had been filled or drained off, accumulation of manure removed, rubbish and piles of wood taken from the sidewalks. These meetings were productive of great good and led to good-natured rivalry in getting the streets into line for the spring cleaning. The noxious weeds were also considered and best methods for eradication given.

Newspaper men, as a rule, are interested in the advancement of their home towns, and ours proved the most enthusiastic of the tribe. They worked shoulder to shoulder with the club, doing much gratuitous work. The state and city laws governing conditions of streets and home grounds were printed in both papers, and a few hundred reprints were made, to send to residents who might ignore gentle suggestions. I will say that this number of leaflets is intact, as we found no occasion to resort to severe measures. Our city council also were always ready to do what they could when backed up by the public sentiment aroused.

Occasionally we would hear some one say: "What is the good of all this talk? Why don't you do something?" To such we wanted to say, but did not, "Give us \$100, and we will do something." But our object was *not* to do the work of others, but to influence them to "get into the swim" of earnest endeavor and line up with the progressive ones. Still we felt that we must show "outsiders" that we could accomplish something, just for the sake of reputation and "influence," and some one suggested the "future citizens" as being good material with which to work.

A news item in the "Park and Cemetery" mentioned that successful work with the children had been carried on in a certain town in Massachusetts by an improvement association, giving the name of the secretary. A letter of inquiry brought a courteous, helpful letter, clippings, etc., which told of results in general. Very little was given in the way of details; all these we had to work out for ourselves; and I purpose now giving the details of our methods, hoping they may aid others in taking up similar work.

The members of the school board were interviewed and found to be favorable to our project. Our superintendent of schools was very enthusiastic and rendered us signal service by his influence with the teachers and children.

We selected for distribution among the children six varieties of seeds, chosen for three special qualifications: first, ease of culture; second, good display about the home; third, those that would stand a reasonable degree of abuse at the hands of the children. The varieties were as follows: Morning Glories, Sweet Alyssum, Four O'Clocks, Nasturtiums, Calendulas and Zinnias.

We procured 100 manila envelopes, with patent fasteners, had them printed with a list of the seeds, and also left space for the name and street address and grade of the child and name of teacher—these entries to be made by the teacher. A cross was to be made opposite the names of the varieties wanted by the child. A charge of one cent per packet of seed was made.

The children were taken in hand by the superintendent and teachers, the plan explained, and the envelopes distributed among those who signified a willingness to plant seeds. They were directed to take these home to obtain the sanction of parents and to get the money. A day or two brought a request for more envelopes, and another 100 were printed and sent to the schools. Still more were wanted. When the returns were all in there were 244 children who had joined the Flower Band. A large number had taken all of the varieties, a very few taking but one. It was understood that if any were found too poor to buy, they were to be furnished the seed quietly. The money received for the seeds, paid for the manila envelopes and the printing, with between two and three dollars over, which was used in purchasing a few awards. A notice was put in the papers that a prize would be given for the *first* bouquet of all the flowers, and for the *best* bouquet.

Our committee was a little late in getting the seeds to the children, and although verbal instructions were given for the care of the seeds, these were forgotten by the majority, and many of the children planted as the spirit moved them. Nearly every week something

was put in the papers regarding the children's work, and the first bouquet was an event. It is needless to say that the chairman of the committee was kept very busy answering the door bell and receiving bouquets and greeting the many wistful faces, wanting to know "Am I the first," "Is mine the best?" Justice and inclination had quite a strenuous altercation. Justice said, "There is but one first and one best." Inclination, soft-hearted, contended that all the bouquets brought, represented just so many *attempted* "firsts and bests" and should be recognized. Suffice it to say that something was given to the owner of each bouquet. There were about twenty of these.

This left 224 children without any recognition, and naturally these were the very ones that needed our efforts most. So we announced a flower carnival for the second week in August and asked the children to take good care of their flowers, so as to help make a grand show. A flower committee was sent to visit every child and to report on what had been done, and at the same time to visit every place where flowers were grown to ask for contributions for the show. The carnival was to cover the afternoons of two days. A large room (our city hall) was secured, and the preceding day the children were told to bring the results of their labors. The flowers came in by the armful and basketful, and it required about a dozen assistants to take the flowers, and to pin a ribbon badge with the words "Flower Carnival, 1905," on each child. This badge entitled the child wearing it to free entrance during the daytime. All others were charged five cents. Each child's bouquet was carefully labelled and placed in a fruit jar, the different grades (school grades) being placed by themselves. The display exceeded our fondest expectations. Our hall was very beautiful. In addition to giving the children a good time, we were desirous of making some money to continue the work; so attractive booths were erected for selling candy, Russian tea, cake and ice cream. A piano in the room gave an opportunity for frequent vocal and instrumental numbers, and recitations were given by the children. Plenty of chairs in the room gave opportunity for resting and listening. On the evening of the last day, a fine musical program was rendered, with an admittance fee of twentyfive cents. When the debris was cleared away, and all expenses paid, we had a surplus of about \$80.00 on hand, together with a whole lot of enthusiasm and courage with which to take up the work for another year.

To sum up the results of the season's work: Every one was justly proud of the greatly improved lawns; the flowers of the 244 children had brightened up just so many yards. The town's people

have bought a corner lot adjoining their city hall on which was a very objectionable, rickety building. The building will be removed in the spring, the lot graded and trees and shrubs planted. The park directly opposite will be put into shape and will be, also, surrounded with cement walks. A large portion of the lake front has been cleaned up and shanties removed.

We have not allowed any ranting or sharp criticism to creep into our work in a way that would apply to individuals or arouse the antagonism of any one. As said before, much was made of the beautiful improvements and meritorious work, and we trusted to example for our results. Our school grounds are very attractive. Some there were who objected to grassing over or beautifying them, for they said the children were entitled to a place to play. Now, there is so heavy a sod that the children's feet make no more impression than a summer's rest completely obliterates. The lawns surrounding the school grounds have shown marked improvement.

There still remains much to be done, and our plans are well laid for work during the season of 1906. It may be well to outline a few of the plans pertaining to the flower work.

1st. Children to be separated, according to grade in school, into two classes. Those of about twelve years and under to receive one set of seeds and those over that age another set. We find the older ones do not like to compete with the little ones.

2nd. Children should be furnished with printed instructions for arranging beds, distances apart for different kinds of seed, where vines, if any, should be planted, and the after care of the plants.

3rd. In order to compete for prizes, the children must do all the work of planting and caring for the flowers, and prizes to be allowed only to those taking the full set of seeds.

4th. The prizes awarded should be something that will help along the interest in keeping up the beauty of the home grounds. We intend to use hardy bulbs, shrubs or perennial plants.

5th. We found the second week of August too late in the season to secure the best flowers, so our carnival will be held about the 15th or 20th of July. Holding a flower carnival makes the children feel the importance of their work, and they should be encouraged to look forward to taking part on programs and also taught to be interested in the work of others.

During the last week in November we had a "children's evening." The teachers made up a program of the best recitations and songs that had been given in the schools preceding Thanksgiving Day. The night was exceptionally stormy and slushy, but the children were there. The large hall was simply packed, many

having standing room only. The improvement club provided numberless popcorn balls, each wrapped in a paper napkin. There was one for each child. It meant lots of work, but it certainly was a pleasure to give them this treat. In February we will have another "children's day," just before distributing seeds, with a patriotic program and a short talk on the spring work.

We feel that by working faithfully with the children we shall be able to cultivate in them a love for the beautiful and to educate them to take an interest in our city, knowing that the future welfare of the homes therein will be faithfully guarded and that they will always be loyal to its best interests.

ANNUAL MEETING, 1905, NORTHEASTERN IOWA HORTICULTURAL SOCIETY.

CHRIST BERTHELTSEN, ALBERT LEA, DELEGATE.

Your delegate arrived at Hampton, Iowa, at four o'clock P. M. Dec. 19 last and proceeded immediately to the court-house, where the meeting was in progress. There was a good attendance of members of the society, but the rural population did not show much interest, it being too close to Christmas and everybody busy. Your delegate was cordially received, made an honorary member for the year and invited to take part in the discussions.

The meeting was called to order by President W. H. Guilford, of Dubuque. Invocation by Rev. Gruvel. Report of directors and delegates was next in order, and later cold storage as a means to keep apples was discussed. It was recommended to dig caves with a six-inch tile several rods in length at the bottom to take away foul air, and one on top to keep it ventilated; brick or cement to form the sides and to arch it over with the same material and cover that with dirt, and seed to bluegrass. It had been tried by Mr. Plummer and also by Mr. Geo. Van Houten and found to be a good way to keep apples. Mr. Plummer had a small shanty in front of the door which he found very convenient, it being a help to keep it warm in winter and cool in summer, as he could shut one door before he opened the other. In the discussion it was stated by Mr. Van Houten that the Wealthy apple was a failure in southwestern Iowa on account of it dropping before maturity.

In the evening there was an address of welcome by Hon. D. W. Dows, responded to by Rev. C. H. True. President Guilford read his annual address. He paid tribute to the dead, and said others were getting gray but still spreading the gospel of hor-

ticulture. New things springing into existence; things that were problematical before are fixed facts now; complaining about the farmer's orchards being an emergency hospital for mare and colt, cow and calf, sow and pigs, and orchards a failure; encouraging local societies, the state to supply literature but to extend no further aid.

C. F. Gardner, Osage, read a paper on plums. He had sent some promising seedlings to our secretary, A. W. Latham: expected good results from crossing Japan and domestic plums; was confident plums were soon coming adapted to our soil and climate.

C. H. True reported a failure in nearly all kinds of fruit, the causes being unfavorable weather, fungi, codling moth, curculio and canker worms; trees dropping their fruit when half matured, but what apples there were left in fair condition sold at one dollar per bushel; the Dunlap strawberry getting to the front, still the Clyde and Warfield did not disappoint the grower; Snyder blackberries fair; the Haymaker and Cardinal raspberries good at Ames.

G. A. Ivins, Iowa Falls, stated that the crop of apples was short but stayed good on the trees; Wealthy a poor crop but in some localities better than in others; in general raspberries were good, such as Cumberland, Kansas and Columbian; strawberries poor, but a seedling of his called "Long Jointer" was good.

E. Blackman, Decorah, had faith in apples, reported peaches, pears and plums a failure, raspberries and strawberries good; recommended to encourage people living in town to plant more trees and shrubs to beautify their homes. Secretary Wesley Greene stated he did not think the Rambler rose perfectly hardy but recommended the Prairie Queen and Dorothy Perkins; people should go to the greenhouses and get hybrid tea roses, and they would have roses all summer; the rugosa recommended for lawn or hedge—for the latter plant one foot apart; the new Century rose was spoken well of. Prof. Greene also stated that in regard to our future strawberry we should have in mind the good keeping quality of the old Wilson berry, which is better the second after it is picked. He also warned against planting strawberries on the same ground year after year on account of insects.

The display of apples was as good as could be expected at that time of the year. There was in all about one hundred plates. A seedling exhibit by Mr. Patten, consisting of about thirty plates of apples, was interesting. Each plate was labeled

so as to give information about the crosses. The "Brilliant," which was exhibited at our state meeting, is a fine apple. It is a seedling from the Fameuse, a good bearer and a fair keeper. Two seedlings from P. Greenings crossed with Grimes' Golden are promising and very good keepers. One of them was awarded first prize. Second prize was given to a big seedling apple exhibited by Mathias Reegler. He had three other seedlings, which all of them were good. The Windsor Chief is a good apple and would be worth trying in Minnesota.

C. G. Patten spoke on "The Evolution of the Apple." He stated he had discovered certain laws in nature by which he could control color, form of tree and other things of importance; also that the first thing to look for is good foliage; if a tree did not have that, it would not be worth experimenting with.

Prof. Beach, from Ames, gave a lecture on insects doing damage to the orchard, showing some apples infected with scab, also some twigs showing scale. He said spraying would help, but it had to be done in time. He also gave a practical demonstration how to mix Bordeaux mixture in liquid form. While the audience was very attentive all through the discourse, the writer found by inquiring of the members that dust spraying was practiced to a considerable extent, it being easier to apply and found very effective.

Prof Beach also took a vote on forty-three different varieties of apples, and the result on some of our common varieties was as follows: Charlamoff, 8 had planted them, and 7 would plant them again; Fameuse stood 12 to 10; Malinda, 10 to 9; McMahon, 9 to 2; N. W. Greening, 15 to 15; Duchess, 16 to 19; Patten's Greening, 16 to 12; Peerless, 7 to 3; Plumb Cider, 16 to 9; Repka, 6 to 1; Tolman Sweet, 16 to 11; Tetofsky, 15 to 9; Utter, 9 to 5; Walbridge, 14 to 1; Hibernial, 13 to 0; Lowland Raspberry, 1 to 2; Longfield, 12 to 11; Whitney, 20 to 20; Minnesota, 8 to 3; Briar Sweet, 13 to 8; Wealthy, 17 to 17. It was stated, however, that by voting on such varieties as Charlamoff, Longfield or Whitney crab it did not indicate that they would plant them to any extent but would not omit them from the list for the home orchard.

A paper on evergreens by S. W. Ferris was thoroughly discussed. Varieties recommended were the Scotch pine, white pine, and Norway spruce. Austrian pine was spoken of by Secy. Greene as not being very good on the start but improving with age. Arbor vitae good on low ground. For windbreaks plant three rows 20 feet apart and miss-match the middle row. Mr.

Patten stated that white pine is not particular about the soil. He also recommended Scotch pine for windbreaks, three to five rows, 16 to 18 feet apart. There was a strong feeling against the Scotch pine on account of it being crooked and unsightly when it gets old.

The election of officers resulted in C. G. Patten being elected president; C. F. Gardner, vice-president; C. H. True, secretary; and E. Blackman, treasurer. Directors: first district, Elmer Reeves, Waverly; second district, W. A. Burnap, Clear Lake; third district, W. H. Guilford, Dubuque. Charles City, the home of the president, was selected as the next place of meeting.

ANNUAL MEETING, 1906, SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.

L. P. H. HIGHBY, ALBERT LEA, ACTING SECRETARY.

The thirteenth annual meeting of the So. Minn. Society was held in the court chamber at the city hall in Albert Lea on Jan. 22 and 23, 1906. It was a decided success in every respect. The display of fruit was splendid. Provision for free cold storage had been provided by the Freeborn Co. Society last fall in order to have a good exhibition on this occasion. Several hundred plates of fall and winter apples were shown, and most of them were very fine. Mr. Clarence Wedge alone exhibited fifty-four varieties of apples. A number of seedlings was shown, some of which were of merit.

The local attendance was good, and there is no mistaking the fact that the interest in horticulture is a growing one in this section. The attendance from outside Freeborn county was not large. Among the visitors who helped make the meeting such a success were the following gentlemen: Livingston, of Spring Valley; Richardson, Winnebago; Reeves, Waverly; Gardner, Osage; Chairlain, Northwood, Iowa, and Nutter, of Minneapolis.

The following program was carried out as announced:

FIRST SESSION, MONDAY AFTERNOON.

"An Experience with Fifty Varieties in a Minnesota Orchard," F. W. Kimball, Austin, Minn.

"The Farm Orchard, as It Is and as It Ought to be," T. E. Noble, Manchester, Minn.

"Three Years' Experience with Raspberries and Strawberries," M. E. Giles, Albert Lea.

"Transforming a Hibernial Orchard," Christ Berthelson, Albert Lea, Minn.

MONDAY EVENING SESSION.

"The Forests of Minnesota—Their Past, Present and Future," Hon. Henry A. Morgan, Albert Lea.

"What is to Be Gained by the Improvement of Seed," Orville C. Thompson, Albert Lea.

"Ornamental Planting," F. H. Nutter, Landscape Artist, Minneapolis.

TUESDAY MORNING SESSION.

Election of Officers.

"Immediate Possibilities in Seedlings," Clarence Wedge, Albert Lea.

"Experience and Observation in Growing Apple Seedlings," Christ Jensen, Albert Lea.

"Windbreak and Ornamental Evergreens," O. M. Peterson, Albert Lea.

TUESDAY AFTERNOON SESSION.

"The Financial and Hygienic Sides of the Farm Orchard," Dr. A. H. Street, Albert Lea.

"Our Best Northern Plums and How to Grow Them," C. F. Gardner, Osage, Iowa.

"My Experience in Spraying," Elmer Reeves, Waverly, Iowa.

Each paper was discussed quite thoroughly and many points of interest brought out.

The Hibernial apple came in for a thorough discussion at the first session. It is a question though whether anything new was said or could be said on that subject. Those who were against it claimed that "boys would not steal them," which is to say that it is not a good eating apple. The defenders of the Hibernial insisted that as a cooking apple it had no superior and spoke of its hardiness as a tree and its wonderful ability to stand abuse. Mr. Faville, of the Stacy Produce Company, gave the Hibernial the hardest blow when he said that his experience in shipping apples had taught him that the Hibernial would not sell twice to the same party. He had to find a new market each year and knew not what to do when he had gone the entire round. However, Mr. Richardson was equal to the occasion, when he humorously answered that he would give it a new name and go the round once more.

The speech of Senator H. A. Morgan on "forestry" was listened to with marked attention, and we predict that the time is fast coming when the people will demand of their state and national legislators that this subject be given the attention it deserves. It was clearly pointed out to the audience how it was the consumer of lumber who was made to foot the bill by way of

high lumber prices made necessary by the shameless destruction of the forests.

The address and paper of Mr. F. H. Nutter, of Minneapolis, on "ornamental planting" was one of the main features of the meeting. We cheerfully admit that it is a subject which needs to be extensively dwelt upon. Right here in Albert Lea there is abundant chance for improvement in this respect, both on public and private grounds. What Mr. Nutter said in regard to too close planting of shade trees is especially applicable to our city. One strong, full crowned, well developed tree is more desirable than a half dozen trees where there is room for only one.

Mr. Reeves gave an address on the subject of "spraying," and answered numerous questions in regard to same, and the subject was generally acknowledged to be a very important one.

If we were to give even a synopsis of all the splendid papers read this report would probably be longer than intended. We think that the meeting had an invigorating effect upon the So. Minn. society and can see nothing but good in it, if it was the "thirteenth."

ARE JAPANESE PLUMS OR CROSSES WITH JAPANESE PLUMS HARDY IN THIS REGION?—So far as we know none of these are entirely hardy, but there is prospect of producing something hardy by crosses of Americana plum with them. It is a work that should be taken up as a part of the movement to secure improved and hardier fruits. If you have Japanese plums or their descendants growing in the neighborhood of the Americana plum where there would likely be chance crosses made, or if you can make these crosses by hand pollination, the seed from such plums should be saved and planted in any possible quantity. It is to the thousands and hundreds of thousands of such seedlings that we must look for probable results in the direction desired.

VARIATIONS WITHIN THE VARIETY.—"We know that no two trees in any one orchard are alike, either in the amount of fruit which they bear or in their vigor and habit of growth. Some are uniformly productive, and some are uniformly unproductive. We know, too, that scions or buds tend to reproduce the character of the tree from which they are taken. A gardener would never think of taking cuttings from a rose bush or chrysanthemum or a carnation which does not bear flowers. Why should a fruit grower take scions from a tree which he knows to be unprofitable? Of course there are plenty of good trees that were budded or grafted with scions taken from young trees or that were taken indiscriminately from old trees, just as there are good cattle that were produced without any care in breeding—some good ones will certainly be secured by accident. But the scientific fruit-grower eliminates all accidents so far as possible; he increases his chances for success when he secures good nursery grown stock and top-works it from trees of bearing age, trees of known productiveness, vigor and quality."

Secretary's Corner.

WORLD'S FAIR MEDALS RECEIVED.—The medals awarded to exhibitors of Minnesota fruit at the St. Louis World's Fair are now being received. At least that is the word that comes to this office from one of the members to whom such a medal was awarded. The certificates, in many cases, at least, were sent out some months since.

NEW PLANTS FROM THE SOUTH DAKOTA EXPERIMENT STATION.—A little circular issued by Prof. N. E. Hansen, horticulturist at the South Dakota Experiment Station, offers a number of importations, including Niobe Golden Weeping Willow, Siberian Sandthorn, Ural Willow, Rosa Rugosa, Russian Black Currant and a new seedling raspberry of his own origination, the Sunbeam Raspberry. For further information as to description, price, etc. address Prof. N. E. Hansen, at Brookings, S. D.

PRESENT ANNUAL MEMBERSHIP ROLL.—At the date of writing, February 21st, there are 1162 names on the annual paid up membership roll for 1906, which is something over a hundred more than the roll of last year contained at the same date. This added to a life roll of about 165 members brings the membership for 1906 at the date mentioned up to 1327. By far the greater part of these are renewals, though a considerable number of new names have been placed on the roll through the Farmers' Institutes and the work of individual members of the society.

PLANT BREEDERS' AUXILIARY.—Applications are already coming in for membership in the Plant Breeders' Auxiliary. There is no expense connected with becoming a member of this auxiliary association, and it only requires that the applicant should be, first, a member of the Horticultural Society and, second, engaged in some way in "originating new varieties of trees and plants." Please read the constitution to be found on page 76 of the February number of our monthly. You may have seedlings that are already growing. This will entitle you to a membership in the auxiliary. Or you may plant them this spring, which will also entitle you to a membership.

IS YOUR MEMBERSHIP RENEWED FOR 1906?—There are still a few names upon the last year's roll that have not yet renewed their membership for 1906 that we are sure purpose doing so. Please give this prompt attention and especially if you want to secure the plant premiums offered by the society to members whose fees reach this office not later than April first and make selections of plant premiums by the same date. You cannot afford to drop out of the society, nor can we afford to have you. The great work the association is doing needs the assistance of every one in the northwest interested in the development of a pomology suited to our conditions. This is the high standard that the horticulturists of Minnesota have set for themselves.

AN INSPIRING EXAMPLE—There is no age limit on the part of applicants for the opportunity of taking part in the contests in growing seedling apple trees for the new prize offers being made by the society, and Mr. O. W. Moore, Spring Valley, now in his seventy-fifth year, intends to begin this work with us the coming spring with the thought that if he does not live to see the fruit from it some one else will. This spirit should reap its own

reward in seeing the fruitage of what is now being planted, and the example here set should be followed by all of our members whose circumstances permit them to engage in this work. What more pleasant occupation than bringing forth the new things the Creator has placed so bountifully within our reach!

HAVE YOU SENT IN A NEW NAME?—About the usual number of new names for membership have been sent in to the secretary by various members this year, but have you sent in one? If you want to see the roll grow to the dimensions that we would like to attain this year it will be necessary for you to send in at least one new member. Another new book, "Plums and Plum Culture," by Prof. F. A. Waugh, has been added to the premium list of the society for new members. There are seventeen books in this list, which cover quite fully the range of practical horticulture as adapted to the average planter of fruits and trees in the northwest. If you have not a number of these books, by all means secure them, either as premiums for new members or by purchase. They can be had, any of them, through the secretary in either way mentioned.

IMPROVING THE STATE FOREST RESERVE.—Mr. T. L. Duncan has prepared and just issued a working plan for the improvement of the twenty thousand acres of forestry land recently granted to the state by Congress, this tract being now designated "Burnside Forestry." The tract includes forty-three lakes well stocked with fish, the country abounding with game and is likely to prove an attractive health and summer resort. He recommends the planting of the tract with pine, it not being sufficiently stocked with trees. This can be done at the expense of from six to ten dollars per acre. At a small rate of growth this should give 18,000 feet of lumber per acre in a hundred years, which under wise supervision might reach 40,000, or for the whole forest, 680,000,000 feet. If these figures are attained it means a lot of money, but it is a good while to wait for it.

PLANT SEED FOR THE NEW APPLE SEEDLING CONTEST.—Applications for seed for this contest in increasing numbers are being received in this office. Mr. Wyman Elliot has saved the seed from sixteen barrels of Malinda apples which were grown on Malinda tops grafted on Duchess, about one half of the tree being of each variety. These Malinda seeds are undoubtedly well crossed with Duchess and other standard varieties that grew in the immediate vicinity. It is hoped that nearly all of this seed will be planted by the members of this society, and it can be had upon application to the secretary at the price of 10c per package of twenty-five seeds, which amount will just about repay to the society the cost of the seed. There are very few of our members but can find a place to plant a package of this seed and to bring into fruitage the trees that may grow from it. For this purpose they can be planted very closely together, or scions can be taken from the seedlings, at one year even, and top-grafted into older trees to bring them into early bearing. Send for a package of seed, and application blank, directions for planting, etc. will be sent you forthwith. You should certainly take a part in this interesting contest, and if you don't win one of the \$100 prizes offered you are quite sure to secure seedling apple trees of some value and a very much increased interest in the work of the society. To plant seed and bring into bearing varieties of your own, you will find a fascinating experience. We must grow thousands of seedlings to feel sure of getting the kind of winter apple Minnesota needs. Help along the good work!

STRAWBERRY PLANTATION OF THOS. E. CASHMAN, OWATONNA.

THE MINNESOTA HORTICULTURIST.

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THE FARMER'S STRAWBERRY BED.

M. R. CASHMAN, OWATONNA.

On almost every farm in Minnesota there is a garden patch where vegetables and small fruits of all kinds are raised. These are generally grown for home use, and any addition to this garden in the way of new vegetables or fruits adds another item to the appetizing charm attributed to the table of the farmer housewife. To the garden rightfully belongs all small fruits, and among the small fruits of this state there is none so delicious, so universally popular and easily grown as the strawberry. Why is it then that on so many farms in Minnesota we fail to find a good strawberry bed, and why is it that so many farmers will tell you that they have had no success in strawberry raising? I believe the chief reason is a lack of knowledge in the culture of the strawberry plant, and on this account it is very often entirely neglected.

During the past seven years I have had the opportunity of visiting many of the farm orchards and gardens in Minnesota, especially in the northwestern part of the state, and I have failed to find a locality where strawberries could not be raised in abundance. I mean by this that there are a great many fine patches of strawberries in every section of Minnesota where farming is carried on. There should be a good berry patch in every farmer's garden, and in order to promote this every farmer should know more about this particular industry.

We all learn by experience, and experience has taught us that in order to be successful we must start out right. I would say to a man contemplating setting out a strawberry bed, select a good location, either in your garden patch or near enough so that it may be fenced in with the garden, and the fence should be so constructed as to prevent stock and fowls from getting in. Very often the garden is far enough away from the barnyard to make a fence unnecessary, and in this event the expense in building the fence is saved. If it is not rich soil make it so by applying a heavy coat of well rotted manure, and be sure that the manure

is well rotted, as this is the best for the land and is not likely to contain any foul seeds. Plough the ground deep and then harrow it until every part of it is made loose and level. Be sure that it has a natural drainage and that too much water from the surrounding land does not drain onto it.

When you are ready to plant select about five hundred or one thousand plants of good, strong varieties, set the plants fifteen inches apart in the row and put the rows four to five feet apart. Before planting cut off the tip ends of the roots and dip the roots in water just before putting them in the ground. Take a bright spade and sink it in the ground about six inches, press it forward and drop your plant in behind the spade, removing the spade and pressing the dirt firmly against the plant by again sinking the spade six inches ahead of the plant and pressing backwards. In this way your plant is well set.

To set one thousand plants will take a piece of ground eight rods long by two and one-half wide, and this will give an ordinary family all the berries they can use during the strawberry season and furnish plenty for preserving purposes besides. Some will say that one thousand plants is too much for one family. Some years it is, but ordinarily very few berries go to waste. Then again, it is very little more work to take care of one thousand plants than it is to take care of five hundred, and where a bed contains less than a thousand it is very often stuck away in some corner where it is neglected.

Now about caring for this bed. Be sure and keep the ground well cultivated and clean from weeds. That is the great fault with many farmers, they neglect the strawberries and other fruits just when they need the most attention. A horse and cultivator can be used to cultivate, and they should be cultivated once every week up until harvest time. When the plants begin to runner out, it is best to go over them and see that the new plants are well down in the dirt, so they can take hold and help the mother plant in the work of making the bed. Do not let the runners grow all the way across the rows, but when they get over twelve inches long turn the ends aside so as to help thicken up the row. If the plants are thick enough in the row, cut off the ends of the runners which grow out too far. The rows should not be over two feet wide, and eighteen inches is generally considered wide enough, and this leaves about two feet of space between the rows, which should be kept clean with the soil well loosened up.

About the middle of December cover the entire bed with coarse, dry straw to the depth of about five inches to prevent alternate thawing and freezing, and leave this covering on in the spring until all danger of heavy freezing is over. Then uncover and leave as much of this straw between the rows as will not

M. R. Cashman, Owatonna.

interfere with the growing of the plants. The straw left between the rows acts as a mulch and keeps the ground moist and allows no weeds to grow; it also provides a good dry place for the pickers to walk on and prevents the washing away of the soil during heavy rains.

The second summer the bed requires no cultivation up to the crop-picking time, and all there is to do then is to harvest the berries. After this is done take your mower and mow off all the plants close to the ground, rake off the tops and go on the bed with the harrow. If the bed is quite free from weeds it needs not be harrowed a great deal, but the cultivation between the rows should be renewed and the row narrowed down to about ten inches in width. Soon the plants begin to come up again and will runner out and cover the newly cultivated ground. Keep them in rows just the same as the first year, and it will not take long for your bed to be in good shape for the next season.

Go through the same process of covering with straw the next winter, and also the same process of mowing off and harrowing the next summer. If this is properly done a strawberry bed may be kept up for five or six years, but ordinarily it is better for the farmer to set a new bed every year.

About varieties—the same varieties which do best for the market grower do best for the farmer. Such varieties as Senator

Senator Dunlap strawberry.

Dunlap, Bederwood and Warfield are perhaps the best for all-around purposes. I would advise the farmer to get all self-fertilizing varieties, and then he will not be afraid of getting mixed up when planting time comes. One thing I should mention and that is, do not try to plant a new bed with old plants; they will give very poor results, and you will get nothing for your work. Get good plants, good varieties, and with the care I have advised every farmer in Minnesota can raise all his own berries and will wonder how he ever managed to get along so long without a strawberry bed.

SMALL FRUITS IN THE RED RIVER VALLEY.

O. J. HAGEN, HENDRUM.

We all know that since the creation nearly all kinds of vegetation have their perpetuation from seeds, and today people know more about this work of nature than they did a century ago. Man has up to this present time been able to look into the secret of nature more fully than ever, but there is still a broad field to study. However many of these secrets are unfolded and made plain to any generation of people, still there is unlocked treasure for the new generation, and it can of course be had more easily for them than for him who had to dig it out by himself and may now unfold this to the younger generation.

Now the point I am after is: We see a strawberry plant for the first time; we have but little idea about it and think that like this it will grow and bear fruit wherever it comes from. We shall be greatly disappointed with it. It will not grow, or if it does grow it will not bear fruit as we expected it would. The reason why, we cannot imagine. It was loudly praised by the fellow who originated it. We were told it was crossed with this and that known good variety, but he forgot to describe what kind of soil it was grown on. Say it was raised on some very heavy soil, and this new variety was sold and planted on poor, sandy land. Besides this probably it is an early pistillate variety, and the staminate a very late one; or we can reverse this point, and the result will be the same. Therefore it is well to have those varieties that blossom out at the same time to make perfect fertilization. Find out what variety will succeed best on the kind of soil one has, as no variety can be recommended for all kinds of soil and locations. For this purpose, as here in the Red River Valley it is particularly necessary, I have tried many recommended sorts but met with constant failure, and this has led me to the conclusion to try many new sorts that have been tried elsewhere and found to be good and in other locations have been condemned.

All new sorts are raised from seeds, and such plants are usually high priced at first, but within a few years the price generally comes down, and a man that wants to spend a dollar or two each year in trying a dozen or more plants of each, will each year be so much the wiser for the same. If you find them to thrive with you, you can take these young plants next spring and plant more. Should the variety be a strong one, restrict its growth by cutting away some runners so as to leave enough for six or eight plants to each one planted in the spring. By letting it run at its will it will exhaust itself in making growth and will not develop fruit buds.

The lack of success has many causes. The soil may lack the essential ingredients to support plant growth. Improper pollen distribution is another factor, also poor root system of the plants. I have found here in the Red River Valley we need plants that take firm hold of the ground, and this kind of plants will resist drouth far better than those with a poor root system, as bacteria cannot act as effectively in dry soil as in moist soil. The preparation of

View in O. J. Hagen's orchard, Red River Valley

the ground previous to planting has much to do with making these underground people to work in harmony with the planter's wishes—but I feel unable to go into detail to describe this very important factor.

Today we don't find many of the old varieties of strawberries catalogued twenty-five years ago. New varieties have been introduced of superior kinds, which have taken the place of many old ones of inferior sorts. But it is also feared that many have been left out of the old sorts that may have been as good as many of the new

varieties introduced. Mankind is of a peculiar instinct, always after something better. I don't blame them for that. Some people strive to be the foremost in every branch of invention, and I don't blame them for that. There are two sides to everything, but I feel like taking opportunity to select the best of them and profit by the small outlay we have invested that way, and by time spent to study up and find out about what they will do in our home gardens, and what pleases us most in flavor and appearance.

For those that will try currants, they should be planted in a rather shady place, as they will not do well in hot, dry places. Currants want moist soil to do their best, also well enriched soil. If you raise some late strawberries, there can be made some of the nicest jelly by using some currants in it, and it makes a very palatable sauce with cream in. I like the currants best when cooked.

There is no reason why we in the Red River Valley should be without fruit and fresh from the garden. Plant lots of them so the children can have what their craving asks for, and, if you can, plant some apple trees and crabs. There is an old saying "Where there is a will there is a way," and we need not now say we cannot raise fruit, not only for our own use, but to sell by the bushel. Some years we will have very late frosts that may cut us out, but there are but few fruit districts in America that are exempt from that, whether they are north, south, east or west. Give fruit growing your study and drop fictitious reading and come along and work alongside our beloved God, and he will give us the needed light on the subject to succeed. It is not my intention to measure it by dollars, but for a home, so love may reign, and we may reap here a part of the lost paradise.

In raspberries there are not many very hardy sorts to select from as in strawberries, that will succeed here in the northwest, that I know of that have done very well. They have to my observation been as follows: Turner, Cuthbert, Loudon and Marlboro. The Loudon is very hardy here, but I have found them too late for this reason: The blackbirds will take them before they are ripe enough for me to eat, or before they color up enough to sell. Otherwise the Loudons are large and productive and have a long fruiting season, nearly up to September. Raspberries should if possible be planted on a northeasterly slope, or at least have good protection from the south, so they will have a moist and well drained soil.

THE COMMERCIAL RASPBERRY FIELD.

HENRY HAGGARD, EXCELSIOR.

I assume that the purpose of every grower of raspberries on a large scale for market is to obtain the largest possible returns at the least possible cost. The extremely low prices of the past two years make it imperatively necessary that we reduce the cost of production. It is also very important that the fruit be of good quality and be put upon the market in good condition, so as to obtain the highest market price, as a difference of twenty-five cents a case may make the difference between a profit and a loss. In times of high prices, berries of almost any kind sell at a profit, but in times of depressed markets, such as we have just passed through, inferior berries are produced at a loss.

The following is not in all respects what I have done with my raspberry field, but is what my somewhat limited experience has taught me to think is a good plan for planting and managing a commercial raspberry field.

First, I would choose a plat of ground with just sufficient slope to insure drainage and admit of cultivation soon after rains, but I would not choose a hillside, first, because if the land was cultivated directly up and down the hill there would be a rapid loss of soil by washing during rains, and, second, if the rows were at right angles to the slope of the hill there would still be some washing, as the earth would work down the hill and ridge up against the upper side of the row, and work away from the lower side of the row, so that in a few years you would have a succession of terraces with your raspberries on the edge of each terrace with roots exposed on the lower side.

I think a north slope is best, though good berries are grown on all slopes. My reasons for preferring a north slope are, first, the plants are less liable to winter kill; second, evaporation is less rapid and the sun's rays are not so direct, thus insuring coolness and moist soil, two very essential factors.

I would prefer land with a clay subsoil, if not new land, and would enrich it with barnyard manure before planting.

I would plow deep and pulverize thoroughly. The field is to last many years, and a failure to do the preparatory work right cannot easily be remedied and is often the cause of disheartening failures year after year for a long series of years.

Next, I would be very careful to get good, thrifty plants with good roots from a healthy two-year old field, rejecting all inferior ones.

I would put two plants in a hill to insure a good stand and as good a crop the next year as possible. I would use great care to keep the roots moist while planting and would pack the earth firmly around each hill.

Before planting I would cut the plants back to eight or ten inches. This height would clearly mark the rows for cultivating. I would cultivate very thoroughly the first year, and after the plants had started young shoots from the roots so that the new growth would mark the rows, I would, with pruning shears, cut off all the old stubs at the surface of the ground so as to prevent the maturing of berries and to throw all the energies of the plant into new growth.

Residence of Henry Haggard, Excelsior.

As to varieties, I have seen no better all around berry than the Cuthbert, but it has been discarded by most growers on account of its tendency to curly leaf and also its tenderness, requiring winter covering, which, as the canes are large and tall, is a big job.

The Marlboro is a good shipping berry of a large size and fine appearance, and a great favorite with my pickers, as they don't have to hunt among the foliage for concealed berries. The berry also separates from its stem readily while yet very firm, making it hold up well when shipped. With me it requires covering.

The Loudon with me has justified the claim made for it as a shipper by the members of this society a few years ago. It is a heavy yielder of good sized fruit, of good flavor and fine for home use, and if it would separate from the stem as soon as the berries color would ship finely, but it will not come off till the berry is overripe and too soft to ship long distances. My pickers dislike it greatly, as it is difficult to determine by the looks which berries will shell off and which will not.

All of these varieties need covering with earth in winter and uncovering in the spring, and the land must again be leveled. As the field grows old it requires the moving of an immense quantity of earth, which at the present price of labor becomes an important factor in the cost of production. The laying down breaks many canes and weakens the roots of many more. These can never be made to stand upright and when loaded with fruit will bend to the ground, and dirty berries will result. The work of cultivating and gathering is also made more difficult.

For these reasons I am inclined to think it best to plant such varieties as are hardy enough to stand our winters without cover, even though they may not be such heavy yielders. The only variety of this kind which I have tried is the King, but I am told there are others.

If I had reasonably level ground and planted a hardy variety, I would plant in hills five feet apart and cultivate each way. If I had hilly ground, or if I planted a tender variety, I would plant in rows six feet apart, with plants three and one-half feet apart, in the row, and cultivate but one way. The plants that had been laid down would lean so much that cross cultivation would be impossible. I would cultivate at least once a week through the picking season, both to keep down weeds and to retain the moisture in the soil. Cultivate as soon after each rain as the ground can be worked without packing.

I would keep the land level by means of the hoe if necessary, and if any biennial or perennial weeds, such as fireweed, dandelion, clover or bluegrass, appeared in the hills late in the fall would hoe them out. Don't let them get a start; they will make lots of trouble if you do.

I would employ no children as pickers. They will require constant watching, will crush the berries and will leave many berries to become overripe and spoil the next picking. If possible, at the beginning of the season engage pickers who will stay with you to the end. Not those who want to work a few days for the novelty, but those who want to earn wages.

Either pack the boxes in the cases yourself or have it done by some careful person. No overripe berries, leaves or dirty berries should be packed. Boxes should be uniformly full but not so full that the upper tier in the case would crush the berries below. This is about as bad as scant measure. Have the pickers use care to keep the berries in the shade as much as possible, as the hot sun often scalds them.

Berries are often very hot when brought into the packing shed. Let them set in the shade and cool before being put in the case. After they are packed, lose no time in getting them on the market.

NOTES ON SEEDLINGS.

WYMAN ELLIOT, MINNEAPOLIS.

Seedling trees have not made so much growth the past season as in previous years.

In selecting apple tree seedlings to plant for fruiting, choose those of robust habit, with well developed, healthy foliage (for the leaves are the lungs of the tree, where the sap is aerated, or elaborated, and thence descends through the sap tubes to form the cell growth), free from thorny spurs, for producing large apples; and those with spurs for producing crabs and hybrids, to use for fruiting or for top-grafting with tender and half-hardy kinds. Always use those free from blight or other imperfections.

For a long lived seedling orchard, trees with a well developed root system are preferable to those of an inferior formation. The root of the tree is the foundation upon which it stands; if defective there will be a very poor growth. These functions are to give stability and underground hardiness, rich food and moisture to be digested by the aerial parts of the tree.

In the past most of the fruits have come from natural crosses and chance seedlings; in the future more care will be exercised to produce quicker and better results. Many of our standard varieties commercially have sprung from chance seedlings which were unappreciated for many years, but as they became locally popular some enterprising person brought them to the notice of fruit growers as worthy of planting.

The sum and substance of all breeding for a particular purpose must be a judicious crossing to produce the thing desired, followed by a wise selection of the best, always the best, and these recrossed again with others possessing ideal qualifications, possibly through several generations until the object sought for is obtained. Seed for planting, to produce seedlings for fruiting for improvement in the direction desired, should be taken from choice, named varieties and long keeping seedlings of the largest size, first quality, good color and texture, possessing as many points of excellence as possible.

A fruit tree, to be of the highest commercial value for this northern climate, should possess seven qualifications, possibly more: First and foremost is that resistant, inherent quality, hardiness, which must dominate every fruit tree to enable it to withstand the vicissitudes of our changeable climate conditions. The second is healthfulness, a twin brother of hardiness. Unless a tree is healthy, vigorous and able to oppose the many attacks of bacterial, insect and

parasitic diseases, even though it may possess all other qualifications it never will prove a profit maker to its owner. Third. Productiveness is one of the essential properties a tree must possess if it gives adequate returns for its cost, care and expense in cultivation. Fourth is size, which gives added value, even if it has not an attractive color or fine quality. Fifth is color. A highly colored red fruit is preferable to a green or yellow for commercial purposes, even if there is not much quality. Sixth is quality, the most appreciated of *all* by every connoisseur, which when combined with size and an attractive color gives us a very valuable product. Having so many early fall and winter varieties, if long keeping is added to the above qualifications, we have an ideal fruit worthy of a hard struggle to obtain.

If I understand correctly the proper method of cross-breeding seedling fruits for a specific purpose, the dominant character of the pollen used determines largely the essential qualities possessed by the tree or plant produced.

The same laws of nature prevail in the production of seedling apple trees as in the breeding of animals; to a large extent like will produce like, resembling one side or the other of the cross, though in many instances in a modified form. The size, color and vigor usually comes largely from the pollen, or staminate, side; the constitution, habit of growth and productiveness from the pistillate side of the cross; of course all the varying qualifications of excellence will crop out in the descendants, showing that no two animals or trees will be exactly alike, each having an individuality of its own.

Quoting from that noted German professor, Anton Kerner Von Marlian, "It has been established, beyond all doubt, that modifications of form directly induced by conditions of soil or climate are not hereditary and that every change of form which persists in the descendants is only brought about as the result of a process of fertilization, or, in other words, that new species can only arise through fertilization. Herein lies also the solution of the marvelous phenomenon known as the alteration of generations, and the question why plants in general flower and undergo fertilization."

"Fertilization consists in the coming together and uniting of two portions of protoplasm which have originated at a distance from one another."

Luther Burbank says: "Cross a hardy and tender plant and often the tendency is toward the hardy; the waves, so to speak, sweep ever up toward the hardy to the highest limit of the hardy, and some few sweep up over; it is these few we must catch and make use of for, on an average, the waves go no higher than the point of hardiness. Thus as the work progresses, the plants which now and then show peculiar hardiness, beyond the normal, are chosen to carry forward the tests. From these very hardest ones

after long breeding and selection come the ones which are not only to unite the desirable qualities of their forbears but which are to be fitted for their new environment."

Speaking of crossing and selection in general, Mr. Burbank says: "There is no barrier to obtaining fruit of any size, form or flavor desired and none to producing plants and flowers of any form, color or fragrance; all that is needed is a knowledge to guide our efforts in the right direction, undeviating patience and a cultivated eye to detect variations of value."

Exact fixed rules for making crosses for special purposes have not, as yet, been fully determined; new ideas are brought forward each year to help the plant breeder. A vast amount of experimenting is being done, both by the scientist and layman in horticultural art, and whoever formulates fixed laws governing plant breeding to a nicety will confer great benefits on mankind.

To grow a seedling apple combining all the qualifications required by the exacting growers, middlemen, merchants and consumers will require time and concentrated effort on the part of the producer; nevertheless there is a certain fascination about producing new seedlings or creating new varieties that enlarges with every one whose mind is led in that direction; the onlooker, of average intelligence, uneducated in the art of growing seedlings, sees but little attractiveness, but to those who have placed the seed in the ground and watched its development into plant life through all the adverse conditions of weeds, insects, fungous diseases and the adverse elements, from infancy to mature fruitage, there is something more than simple fascination.

The planting of seed from which to raise new and improved varieties by old people like myself, seems like planting, not for our own profit but for posterity; yet if by our example any younger horticultural members shall partake of our zeal we shall not have spent our time and efforts in vain.

An Acre for the Boy.—I believe in giving the boy or girl an acre or two of good land close to the house upon the understanding that I am to furnish trees, plants and seeds to stock the plot, and that he or she is first to supply the family with all the fruit and vegetables the family can use, and then have the balance to sell to best advantage, the proceeds to be his or her own. This will serve to center the children's interest in the farm, and the conviction will soon follow that there is no place where a person can live as independent and pure a life as in the country.—O. J. Farmer.

LIST OF FRUITS FOR MINNESOTA PLANTING.

Adopted by the Minnesota State Horticultural Society, Dec. 7, 1905.

For the guidance of planters in Minnesota.

APPLES.

Of the first degree of hardiness: Duchess, Hiberna, Chalmers, Patten's Greening, Okabena.

Of the second degree of hardiness: Wealthy, Tetofsky, Malinda, Peerless, Northwestern Greening.

Most profitable varieties for commercial planting in Minnesota: Wealthy, Duchess, Patten's Greening, Okabena, Northwestern Greening.

Varieties for trial: Repka Malenka, Anisim, Yellow Sweet, Brett, University, Newell's, Lowland Raspberry, Iowa Beauty, Jewell's Winter, Yahnke, Gilbert.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent, Longfield.

CRABS AND HYBRIDS.

For general cultivation: Florence, Whitney, Early Strawberry, Minnesota, Sweet Russet, Gideon No. 6, Virginia, Transcendent.

Varieties for trial: Lyman's Prolific, Faribault, Shields.

PLUMS.

For general cultivation: DeSoto, Surprise, Forest Garden, Cheney, Wolf (freestone), Rollingsstone, Wyant.

Most promising for trial: Ocheeda, New Ulm, Stoddard, Mankato, Aitkin, Brittlewood, Compass Cherry, Terry.

GRAPES.

In order of ripening: Beta, Moore's Early, Janesville, Brighton, Delaware, Worden, Agawam, Concord.

RASPBERRIES.

Red varieties: Turner, Marlborough, Cuthbert, Brandywine, Loudon, King.

Black and purple varieties: Ohio, Palmer, Nemaha, Gregg, Older, Columbian, Kansas.

BLACKBERRIES.

Ancient Briton, Snyder, Badger.

CURRANTS.

Red Dutch, White Grape, Victoria, Stewart, Long Bunch Holland, North Star, Pomona, Red Cross.

GOOSEBERRIES.

Houghton, Downing, Champion, Pearl.

STRAWBERRIES.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Mary, Clyde, Senator Dunlap.

Imperfect varieties: Crescent, Warfield, Haverland.

NATIVE FRUITS.

Valuable for trial: Dwarf Juneberry, sand cherry, buffalo berry, high bush cranberry.

Capt. Reed: Why don't you add the Northwestern Greening?

Mr. Andrews: It is not hardy enough.

The Chairman, Prof. Saml. B. Green: Capt. Reed says the Northwestern Greenings ought to go on the list of "first degree of hardiness." What have you to say to that?

Capt. Reed: I move to amend the report to the effect that the Northwestern Greenings be put on the list of "first degree of hardiness."

Mr. Elliot: If you were in the secretary's office and heard the complaints about Northwestern Greening not being hardy, you would not want to put it on the list of "first degree of hardiness." Many growers who put out the tree throughout the state are beginning to get a little doubtful about its hardiness. I myself have the Northwestern Greening grafted on Hibernial stock, and I am in doubt about its being a long lived tree, not equal to the kind that should be put on the list.

Capt. Reed: I made the motion for the sake of hearing the matter discussed. I do not know much about the tree myself, but from the display made and on account of its keeping qualities I think it ought to be placed on the list.

The Chairman: You want it among the "most profitable varieties to plant in Minnesota," but when you talk about its being of the first degree of hardiness that is another story.

Mr. Elliot: An apple displayed on the tables here does not indicate anything about its degree of hardiness; it does not show that it has any degree of hardiness that can be recommended for all sections of the state.

The Chairman: We have had two trees at the station for twenty years, and they have borne three crops; one is dead, and the other is half dead. I also had some sent to me by the originator, from Janesville, Wis., about 1890, and they all died. Another thing, as Mr. Elliot says, the reports that come into my office and into the office of the secretary are so discouraging that we had better leave the matter as it is. After they bear a few crops they die, or they do not do well, and as a general rule it gives poor satisfaction.

Mr. Taylor: At Howard Lake it bore a good crop of apples, but the trees look weak.

The Chairman: They are going out almost everywhere.

Mr. Taylor: I would not be in favor of putting it on the list of "first degree of hardness."

The amendment offered by Capt. Reed was then put to a vote and lost unanimously.

The Chairman: We put the Northwestern Greening in the list of most preferable orchard varieties.

Mr. Underwood: I do not know why the Okabena has never been placed in the list of "second degree of hardness." I will never make a motion to have it placed anywhere on the list. It has won its way and it will hold its own, and I have no favors to ask for it.

But if anybody has any reason to offer why the Okabena is not hardy and should not be placed on that list I wish they would tell me now. I understand hardiness to mean ability to grow, to live and be healthy and to produce apples. That is what I call hardiness. All I want to know is whether or not it does that. If it is failing I want some one to tell me.

The Chairman: We have it in the list of the "most profitable varieties."

Mr. Underwood: I know that, but you have the Patten's Greening in the list of "first degree of hardiness," and it is not so well known for its hardiness as the Okabena. There have been a thousand Okabena planted to one of Patten's Greening, and what I want to know is whether it is not fully as hardy, and whether the tree does not live and produce apples. Are the trees healthy and thrifty? That is what I want to find out. Does anybody know of any place or locality where the Okabena is a failure? If so, I want to know it. You have the Patten's Greening on the list of "first degree of hardiness," and the Okabena on the list of "second degree of hardiness." It is placed with the Malinda. That is entirely contrary to my judgment, but I am willing to let it stand. I think, however, it belongs in the first list.

Mr. Taylor: I move to amend the report that the Okabena be placed on the list of "first degree of hardiness."

The Secretary: There are two varieties on that list of the second degree of hardiness that are as hardy as those on the first list. Those are the Okabena and the Peerless. Of course, the Peerless does not bear well, and it may be that its buds winter-kill, but I fail to hear reports from any part of the state where these varieties are planted but what they stand the winter well.

Mr. Cole: I probably have a chance to see as many trees in the country as any one. I do a great deal of traveling. I have sold hundreds of Okabena, and I have heard nothing but praise for both the tree and the fruit. The tree itself is hardy and bears annually, and I have often wondered why we did not put the variety on the list of "first degree of hardiness." It gives entire satisfaction wherever I have found it, though sometimes where there is an unfavorable location it may not do so well, but I am sure it will do as well as any variety that is on the list of "first degree of hardiness." I have also noticed that the Peerless is as hardy as any, but I have also noticed that it does not bear until it gets old.

Mr. Taylor's amendment was then put to a vote and it was unanimously recommended that the Okabena be placed on the list of "first degree of hardiness."

Mr. Elliot: If the Peerless is as hardy as those other varieties I do not see any objection to putting it on the first list. There is this about the Peerless, experience has taught me that it does not bear equally well in all locations. I have a place where it is on a high elevation and where it is doing admirably, while on low flat grounds it is not producing as it ought to. It is only a mat-

ter of location about the Peerless bearing fruit, and that is a matter that every grower will have to study with all varieties.

Judge Moyer: I will move that the Peerless be placed on the list of "first degree of hardiness."

The chairman then called Mr. Taylor to the chair.

Prof. Green: I can name you twenty varieties and more that are just as good as the Peerless. I am digging them up today, throwing them on the brush heap and burning them. The Peerless is a disappointment to the people of the state. I should not have mentioned this thing but from the fact that there was danger of putting it in a place that I regard as sacred, because it is for the guidance of gardeners and amateurs who want to plant apples in this state. I do not care what we put on the second list or on the list for trial, but let us keep the list of the "first degree of hardiness" up to the standard, and let us put nothing on it like the Peerless. I do not want to have it stricken off the list entirely, but if we are going to discuss the Peerless in full I am inclined to say that that is what ought to be done with it. It ought to be taken off the list altogether. I have nothing against the Okabena, and it ought to be put on that list, perhaps, but I do not want to see the Peerless put on.

Mr. Eli Stone: I planted ten years ago an orchard of Peerless apple trees myself. I waited ten long years for them to commence to bear, and they have never borne any apples to speak of until last year, when they bore about fifty bushels, and that is the only time they have borne to amount to anything at all. I am not pleased with the quality of the apples, but as to hardiness I cannot say, and what has been said about it may be true, but I have not seen the buds kill back at all. I do not like the apple, and last fall in discussing the matter with my wife I said I thought I had better grub them out and plant some better varieties where they stand and not have the Peerless occupy the ground. That is my opinion of the Peerless.

Mr. Pond: I have had a little experience with the Peerless, and I consider it one of the best varieties I have. It is the most profitable for market, it is a beautiful apple, and I consider it almost first in quality, and it is almost free from blight, as much so as any variety I have on my place. I have a great deal of blight. There is one other variety I have wondered why it is not on the list, and that is the Itasca. I have had a little experience with it, and consider it a very strong, thrifty and heavy bearing tree. It has fine fruit—I sold nearly two barrels—and I have wondered a good deal why it was not on the list. I have brought apples to the meeting and wondered why you did not enter them. I can say I like the Peerless.

Capt. Reed: About three years ago I set out about 300 Peerless, and afterwards I wished I had not done it. I thought it would not bear, I did not think it was a producer, but this season they bore well, nice, large apples, and I became very much in

favor of the Peerless, and hereafter I shall plant the Peerless apple. They were positively as handsome an apple as I ever saw.

Mr. C. F. Gardner (Iowa): How about the quality?

Capt. Reed: The quality was splendid; pretty nearly as good as the Wealthy for eating.

Mr. Eddy: I will say nothing against any apple at all, but for the sake of the sincerity and the reliability of our society, and for the sake of amateur growers and people who want to plant fruit trees, we want to be very careful as to what we put at the head of the fruit list so far as hardiness is concerned, because this fruit list is a guide for ignorant people, people who are not acquainted with apples, and they understand that our society is strong in this state, and we are supposed to know what varieties are the best, what are the hardiest kinds to grow in this state, and I would be very much in favor of seeing our society extremely careful in selecting just such kinds as we know are of the first degree of hardiness in the Northwest to put into the list of the "first degree of hardiness" in our fruit list.

Mr. O. F. Brand: The Peerless has been introduced over a wider extent of territory than any apple tree that has been before the public for the same length of time. You will find it from Vancouver to the northeastern part of Maine; from Arkansas, yes, from way down in Texas and through many of the southern states on to the Pacific coast, and where I do hear from the tree it is mostly good reports. On the Pacific coast one man who had ordered six trees and paid \$10 for them a good many years ago, ordered 400 more. He thought it was one of the best apples he had. A man in the state of Maine—I never saw the man—I gave him nine trees—and he said, "It is the hardiest and best tree we have and produces the best apples." I do not know the man; I do not know whether his judgment is good for anything or not. Up here in our own state in the counties of Todd, Becker, Clay, in the Red River Valley I get nothing but good reports of the hardiness of the Peerless and also of its productiveness. Up here at Starbuck, between Starbuck and Glenwood, there is an orchard where a man had a hundred trees planted for a number of years, and he had an immense crop of apples. That man reported to me that it is a heavy bearer up there. I know there are localities where it does not bear well. Here is Mr. Merritt present; he can probably tell you something about the Peerless. It is immaterial to me where you put it on the list or whether you put it on at all.

Prof. Green: While the Peerless has succeeded in some places, yet as a whole it has been a disappointment. I could name you some other varieties of apples that have succeeded wondrously well in some places. I am willing it should remain where it is, in the list of "second degree of hardiness," where it has been for some eighteen years, and I would like to amend it so that the paragraph be accepted as it is. We could go on and discuss this fruit list till six o'clock. There are at least fifty varieties that ought to be discussed in connection with this fruit list. Now is the time to do so

if you want to go over it. I am in favor of adopting the report of the committee as read, and I believe after you have threshed the whole thing over you will not be in better shape to adopt it than you are now.

Mr. Elliot: I made that motion for a particular reason. The Peerless was mentioned in connection with the Okabena. I knew facts as I learned them from every quarter and direction about the Peerless. While the Peerless is good in some locations, in a great many localities it has been a disappointment, and I feel, as has been stated here, that we should keep the head of our fruit list sacred. There should be nothing put in there that we cannot absolutely guarantee as to hardiness and productiveness. It seems to me the best way for us to do is to leave it where it is.

Judge Moyer: I speak of the Peerless as it appears in our neighborhood. I think it is the best thing we have and hardier than the Hibernial.

A vote was then taken on Judge Moyer's motion to amend the list by placing the Peerless in the list of "first degree of hardiness," and the amendment failed.

Mr. Dewain Cook: I move that the report be adopted as it now stands.

Mr. Brand: What is the list recommended for commercial planting? I would like to add to that list the Estalline and the Itasca if I can obtain a second to the motion.

Mr. Pond: I will second the motion.

Mr. Brand: The Itasca has been introduced for about twenty years, and I was told by a gentleman here that he had a single tree that has produced fifteen bushels. It has not been planted a dozen years. Is there any other tree that has done as well as that with us? I find it is the earliest bearer that I have. It is a heavy bearer, the apple keeps well in the fall as well as later, and it is an extremely hardy tree; it is equal to the Duchess.

The Secretary: An objection to this seems to be that it has always been the practice of our society not to recommend anything for general cultivation until the variety was very generally grown by the nurserymen of the state, so that the demand for the variety could be supplied. Of course, nurserymen here generally know whether they are cultivating the Itasca, but my thought is that it is not generally cultivated.

Chairman Taylor: Will those nurserymen who have the Itasca for sale raise their hands. (A few hands were raised.) It seems it is not very generally cultivated.

The motion by Mr. Brand to amend the report by adding the Estalline and Itasca to the list recommended for commercial planting was then put to a vote and lost.

Mr. Cook's motion to adopt the report of the committee as amended was then put to a vote and prevailed unanimously.

TOP-WORKING TO SECURE WINTER APPLES.**SETH H. KENNEY, WATERVILLE.**

The 15th of April, 1901, I top-worked about fifty trees of the variety known as the Duchess of Oldenburg. They were at that date twelve years old. I placed the variety known as the Malinda for grafts about two-thirds up towards the tops of the trees, on the small ends of limbs less than one-fourth inch in diameter. We never, from past trials and visits to other orchards, have thought this apple, the Malinda, a safe investment on its own roots. I have for several years believed that ironclad stock would to a certain extent impart hardiness to the graft, and I think I can show the good union of the Duchess and Malinda and the result attained that the Duchess is a safe stock to grow the Malinda apple on, and that it imparts its hardiness to the Malinda. In proof, I have never seen a Malinda graft that was not just as hardy as the Duchess, and from my past experience I feel it would be a safe investment to top-work Duchess with the Malinda and raise that variety by the carload. For two years past we have tested the keeping qualities, and the results have been very good, keeping some specimens until the following June.

Grafting in April, 1901, has given me five years' growth on the Malinda grafts. I have fruited some Malinda apples for three years. Last year, on or about the 9th of June, a very bad blight struck all the apple trees. I always believed in thinning to grow large fruit, but not in this particular way. The Malinda suffered more blight than the Duchess on the same trees, and I thought they would not amount to much. After five years' growth the grafts were from one and one-fourth to one and one-half inches in diameter where grafted and by actual measurement from six and one-half to seven feet long, and the fruit averaged large, by actual weight many of the apples weighing one-half pound each. There were sixty-six bushels of apples of Malinda in 1905. On account of the blight it was not so full a crop.

From the results obtained from Malinda seedlings grown by Mr. Perkins, of Red Wing, it would seem to me that seed grown on the Duchess might produce a hardier tree than the original Malinda.

The question might be asked, "Would Malinda do equally well on other varieties?" I have tested them on Hibernial. The first three years they blighted very badly. On the Yellow Siberian they were

of much smaller size but healthy. On the Gould crab they grew much smaller (these trees I have had forty-five years). On the Hutchinson Sweet crab they were smaller in size but bore well.

Seth H. Kenney and one of his twenty-five year old Duchess apple trees.

On the Wealthy a few grafts bore the same sized apples as on Duchess.

In the spring of 1902 I sent to the Missing Link Apple Tree Co., and as I could not buy grafts I bought fifty apple trees, to get a longer keeping apple. Some of you may remember my bringing a bushel of apples to the winter meeting of this society the winter of 1903. The last winter (1904-5) killed every tree of that variety. I had trimmed this supposed "Klondike apple" till I had set 1,000 grafts, and I used as stock to graft on what I thought the hardiest sorts. I had, 1st., the Yellow Siberian tree, forty-four or forty-five years old; 2d., the Virginia crab; 3rd., the Wealthy; 4th., the Peerless. I grafted all over the Peerless. The tree was of a large size, one of the first set out. It never had produced a peck of apples in any one year, and I thought I would get big returns. I also grafted on three trees of the Gould crab, the last three trees I grafted. All of these three survived and bore heavily the past season.

Now, I will give you a little of my experience, and I ought to be a wiser man now than in the past as I don't *believe everybody*. First as to the Yellow Siberian tree, forty-four or forty-five years old. I had grafted on this tree both Malinda and Missing Link; the Malinda are as good as ever but smaller apples. The Missing Link grew rapidly, bore one good crop and died. Second. I grafted the Missing Link on a large Virginia crab; it bore well one year, and the graft died. Third. The Missing Link on Wealthy had one crop and then the graft died. Fourth. Missing Link grafted on Peerless all died.

I am keeping the best till last. I grafted three trees of the Gould crab with the Missing Link, trees I have owned at least forty-four years. I obtained them of the Gould Nursery Co., of Beaver Dam, Wis. The grafts did not bear till this year. They never have killed back a bud. They bore a full crop of the Missing Link the past season, such as I show you samples of. If this crab tree imparts hardiness to an apple that would not stand on other hardy stocks, why cannot the Greening, Baldwin and Russet be made to thrive in this climate? Twenty-five years ago on a Gould crab tree I had sent to a brother previously, when I visited him, I grafted a Pewaukee, and it is now the best long keeping apple on the farm. The Pewaukee top has outgrown the stock below two inches. I have saved some long scions of the Gould crab to get as much of a Gould root as I can to experiment further. While in New England last fall I obtained scions of the Greening and Baldwin to graft on the Gould crab to obtain further results.

Mr. C. S. Harrison (Neb.): I think the Missing Link could be missed very well. I did not think much of the apple when I planted

it. I planted it with the result that the tree died and all the grafts died.

Mr. Brackett: Which would you prefer, scions taken from top-worked trees or scions taken from trees not top-worked?

Prof. Hansen (S. D.): I don't believe there would be enough difference to count.

Mr. Brackett: We have got to get healthy stock underneath for top-grafting. I do not think it has any influence on the graft. If you put on good, healthy stock, it will survive if the scion has not been hurt by winter. We have to get healthy stock underneath.

Mr. Kenney: I would like to ask him how it was that one stock should bear a full crop when it killed out on all the rest of the trees. I think the proper stock imparts hardiness to the graft.

Mr. Brackett: I think the graft may be injured by the winter, and if it was on its original stock, the old tree being injured the tree would die, while if your graft was injured only and it was on strong stock it might add to its hardiness.

Mr. Kenney: Why should these trees of the Missing Link be dead? I thought this Yellow Siberian was about the hardiest thing I could find, and I thought the Virginia crab was about the best thing on which I could put tender varieties, but they all succumbed. Why should they live on the Gould crab? This is an experiment with me.

Mr. Elliot: Does the Gould crab grow any more vigorously than Yellow Siberian or the Virginia to graft on?

Mr. Kenney: I should think it was about the same. The Gould crab tree is forty-four or forty-five years old, and it has always been quite hardy, but I thought the Yellow Siberian was the hardiest of all.

Mr. Elliot: You think the union of your graft was about as good on one tree as on the other?

Mr. Kenney: I could see no difference.

Mr. Elliot: I was at your place and saw some of your grafting. Was the grafting at the end of the bough or in the top of the tree?

Mr. Kenney: At the end of the bough. I never like to cut off large limbs to graft.

Mr. Elliot: Why do you graft on the ends of the limbs?

Mr. Kenney: So that if the graft should fail the tree would grow right along and there would be no perceptible damage.

Mr. Elliot: You never thought of another essential reason why it should be done that way?

Mr. Kenney: No, I don't know that I ever did.

Mr. Elliot: I find this: in grafting growing trees, if I bend a limb down I am inclined to think it will fruit earlier, and that is what struck me as being a reason in that direction. In regard to the Gould crab, I think if we could all know the conditions of everything we would find there was a certain affinity between the stock and the scion that was not in the other stock.

Mr. O. W. Moore: That is what we want to work for.

Capt. Reed: On what sized limbs do you graft?

Mr. Kenney: About a quarter of an inch in diameter; about the size of a pipe stem.

Mr. Harrison (Neb.): Do you make splice grafts?

Mr. Kenney: I split the scion and the stock, and then I wind with wax cloth.

Mr. Brand: How high do you graft from the ground?

Mr. Kenney: I begin at the top and work down about two-thirds of the way. I find tops grow more rapidly than do the lower limbs. I got nearly thirty barrels on the lower limbs of my Duchess trees, and after I picked the Duchess the sap went to the Malindas. That is the way I think I got the size in the Malindas.

Mr. Brand: You did not understand what I meant. How high were your grafts from the ground?

Mr. Kenney: About two-thirds of the way up.

Mr. Brand: How far would that be?

Mr. Kenney: About twelve feet.

Mr. Brand: And those that failed, were they all as high as that?

Mr. Kenney: Yes, some were higher. On the Peerless they all failed but one, and that was a limb on which the snow lay pretty deep, and I had reason to believe the snow kept it protected.

Mr. Brand: Were these Gould crabs in the lower part of the orchard or the higher?

Mr. Kenney: They were about on average ground.

Mr. Brand: On one side of the orchard or on the inside?

Mr. Kenney: On one side and about one-third of the way up hill.

Capt. Reed: What time of the year do you prefer cutting scions for grafting that you expect to use next spring?

Mr. Kenney: I have already cut some, and I have sometimes let them alone until March and then cut them. I do not see that it makes any difference.

Capt. Reed: How do you keep them?

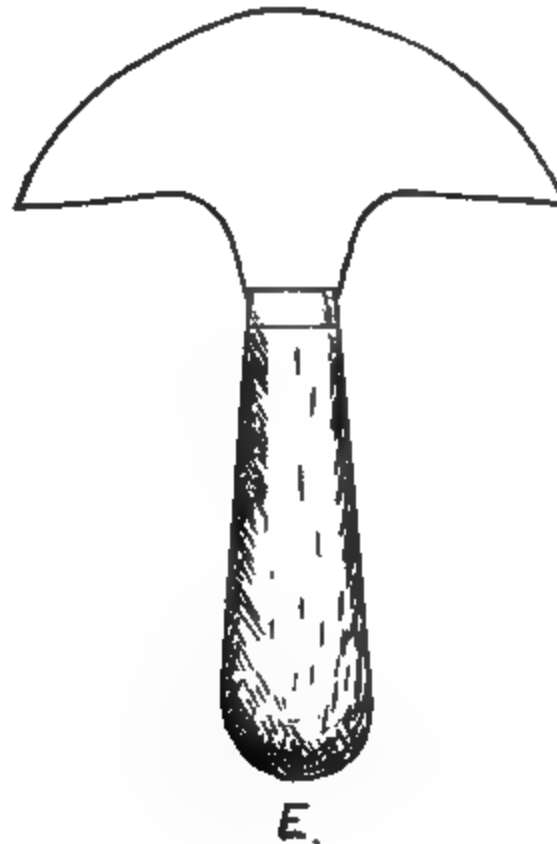
Mr. Kenney: I put them in sand in the cellar, although this year I put them in a keg of rotten sawdust. Three years ago I cut off a lot of Transcendent scions under some trees, and I put them in a keg in which there was some rotten sawdust, and in the spring when I pulled them out I saw a good many of them had rooted. I set them out, and I have now fifteen Transcendent trees on their own roots that started in the cellar in that rotten sawdust. I want to ask if anybody has ever had a similar experience.

Mr. Harrison: I have grown them in the spring.

NEW PROCESS OF GRAFTING.

WYMAN ELLIOT, MINNEAPOLIS.

There are whip, cleft, saddle, veneer, side, bark, herbaceous, seed, double and cutting grafting. The one I wish to call your attention to is cleft grafting, leaving a large spot in the stump of the tree which rarely heals up solid when the old method is used. In the new process of grafting it makes no difference how large the stump is, the scions can be set all around it without injury to the heart wood. Where it has been tested they report admirable



C.

A.

B.

A. Opening cut by saw. B. Opening enlarged by knife E. C. Graft when inserted in opening. D. View from above showing how graft fits into opening.

success—95 per cent of a full stand. The tools used are very simple, only requiring a sharp, thine-bladed knife, a sharp pruning saw and a harness maker's circular cutting knife, a pot of melted wax, a brush and a handful of raffia or strips of old cloth to tie around the stump and hold the scions in place until a union has formed, a discerning eye, a trained hand, some mechanical genius and good judgment in cutting off the proper limbs, and we are ready for our work. First, saw off the limbs in the central

part of the tree, leaving a few limbs to take up surplus sap caused by severe trimming. Then saw a slit through the bark, lengthwise of the limb to be grafted, one and one-half to two inches long, and one-fourth to one-half inch deep, where the limb was sawed off, according to size of scion used. Take the circular knife shown in cut and trim out. Cut scarf wedge shape, one-fourth to one-third of an inch wide at the widest place. This is done by inserting the point of the knife at the lowest point of the slit and giving the knife a rolling cut up to the end of the slit. Trim out all slivers smoothly, and then you are ready for the scion. This is to be made wedge shape with one end cut off to a point, with a bud about half way down on the uncut side of the wedge. In using the graft hold the point at the bottom of the slit and drive it in firmly so the bark of both scion and stock will come together. The reason why there should be a bud on the scion at the point indicated is that where the bud is there is a slightly raised growth, and it is easier to have the saps cross at this point, thus insuring a more perfect union. Three buds are usually left on each scion, and if the lower bud is placed in the center of the slit the graft makes a more perfect union, and it serves as a brace to support the rest of the scion's growth. When the buds on the grafts have made eight to ten inches growth pinch out the leaders and thereby cause them to form side branches. Keep all sprouts cleaned off from the limbs grafted. Sometimes in windy and very exposed positions, it is well to tie a strong limb to the stock, also a tie around the graft, to give it support until it is firmly established.

THE JAPANESE WALNUT.

(A discussion.)

The Chairman: Tell us about the Japanese walnut, Mr. Empenger.

Mr. Empenger: I bought some trees five years ago, and one of the trees began to bear a year ago, and I raised four quarts of nuts. They were broken off and neglected to some extent, but they came on in pretty good shape. That is about all the history I can give you about them.

Mr. Brady: I have paid some attention to Japanese walnuts. Mr. Wilfert has some trees that are five or six years old, and the last two or three years they have borne nearly a bushel of nuts to the tree. I have got some trees from him. The bark is white, and it is a nice looking tree; it looks as fine as birch and is very pretty, and the nuts are fine, better than our black walnuts. On low lands, where they grow pretty rank, they seem to winter-kill, but on high soil they seem to do splendidly.

The Chairman: The nuts grow in clusters?

Mr. Brady: Yes, about nine in a cluster.

Mr. Empenger: I had twenty-three in a cluster.

The Chairman: I have some here. The quality is good.

Mr. Mitchell: I procured about a bushel of the seed from the same source, and the young trees seem to be perfectly hardy; they do not seem to winter-kill. They stand about three feet high, and they have not winter-killed at all.

The Chairman: We have had some trees for a number of years, and they have killed back a little.

Mr. Mitchell: Mine have not killed back at all, but they have had no fruit.

Mr. Hall: Where can seed be obtained?

The Chairman: Mr. Wilfert has the seed. (Andrew Wilfert, Cleveland, Minn.)

BLACKBERRIES AND OTHER FRUITS IN THE SUBURBAN GARDEN.

GEORGE S. GRIMES, MINNEAPOLIS.

Some years ago I was boasting to an office neighbor of my blackberries. He said, "You are talking about black cap raspberries; you can't raise blackberries in this country. I have not had any blackberries since I came from Ohio twenty years ago." I did not stop to argue the proposition with him because my blackberries were unusually large that year, but the next morning I picked a quart of the largest I could find and brought them down to him. Since then I have heard no more from him about Ohio blackberries.

I have found in many years' experience within the limits of this city that my blackberry patch will yield larger returns for the amount of ground occupied and the amount of labor bestowed than any other variety of fruit I have in my garden. Some seven or eight years ago I planted out my present patch of blackberries, down near the pasture fence. I have about three or four acres out beyond Lake Harriet, and that is where I spend my mornings and evenings in recreation. Those berries were put out in two rows. I am an amateur in the business, and I do not know whether it was properly done or not. I put my rows about five feet apart and the plants, I think, five feet in the rows. I have never cultivated those berries since the first year. The two rows soon went into partnership, so that it was no longer possible to get a horse and plow between them, but they have done excellently well for all that. The variety I have, as it was reported to me, is what is

called the Ancient Briton. The berries, as I say, were planted on the lower side of the garden next to the pasture fence, upon a black loam with a sandy subsoil, where there was plenty of moisture, and since the first year they have never failed to produce a crop except the season they were frozen, which was in the winter of 1903-4, when they were killed down to the ground. I never could account for that. I am sure the berries were covered as carefully that winter as they were in previous winters, but they seemed to lack hardiness that winter; at any rate they were killed down to the ground, and I was grievously disappointed.

I think the problem of raising blackberries is solved if they are covered properly, and I take a good deal of care about that. In the first place, all the berry canes have usually a leaning inclination in the same direction, they are usually bent in a certain direction. I always try to put them down along that line of inclination, along the line of least resistance, for the great trouble in covering blackberries for winter is the breaking of the vine, which grows very rank, and exercise as much care as you may you will find you will break some of them, but you can break a good many and still have an abundance left. I have always endeavored to put the vines down before they are frozen, or at least in an unfrozen condition, because there is a great deal less liability of breaking them. I covered my vines a week ago last Saturday (Nov. 25), and the thermometer was up to 40 or 50 degrees, the ground was not frozen, and there was very little breakage in putting them down. In the matter of covering I have sometimes used dirt, and sometimes I have taken a piece of sod out of the border and put the tips down and put the sod on to hold them, and then covered the vines with some coarse material, and the coarser the better, preferably some litter from the barn or, perhaps, cornstalks, and then put on something that would hold the covering together. Last year I ran out of what I thought was proper material for covering and put on some straw, and the mice got in and did some damage, but even at that I had an abundant crop after trimming them out.

Of course, I was raised in a berry patch outside of the city and now live on a part of the old farm where I was born, but it is a marvel to me that so many people live in the suburbs of the city who are employed in offices and stores during the daytime and have plenty of ground out there and do not have those things. I don't know what they are there for. I am a blackberry crank, and I think if I had to let go of my garden and orchard I would hold on to the blackberry patch for the last thing, because I think there is a greater return for the amount of labor put in and the amount of ground occupied than can be obtained from any other variety of fruit.

It is no trouble to cover them. Two men or a man and a boy can cover them in an hour, and they can be uncovered in the spring in less time. By mulching around them it keeps down all the grass and weeds that come up, and I have not had a hoe in that patch for several years. Some weeds come up in the border, but it is not much trouble to pull out the weeds that grow too rank. Outside of the picking I did not put in over half a day altogether of actual time in that blackberry patch, and as a money proposition it is a good investment, but above all the man who is confined to the office during the daytime gets a far better return in the way of recreation than he could get out of anything else, because to the man in the suburbs who spends his time doing something like that it is not labor, it is recreation.

I would like to say something about the apple orchard. I have an apple and plum orchard out there, and I get something out of that every year and considerable some years. Of course, there are the boys from the city that have to be taken into consideration in raising apples, and for that reason the orchard ought to be near the house. It ought to be in sight of the living part of the house, and I have arranged my orchard somewhat with reference to the highway. For instance, I put out my Hibernals next to the highway. (Laughter.) I find if a boy gets hold of one of those apples before it is thoroughly ripe that it is about all he wants, and he goes away. (Laughter.) I have raised this year on one of my Hibernial trees, standing within a couple of rods of the highway, four bushels of apples, and the others in bearing did nearly as well. I find the Hibernial is the best bearing apple I have, and next comes the Duchess and then the Wealthy, but as to the quality of the fruit the reverse is true.

I have not had any experience with blight or rust on strawberries. I have managed to get a crop of strawberries, and a good one, every year, but I have planted out a new bed every year. I do not cultivate them; I let them run together. I have only a small bed for my own use, and I have never had any trouble with the winter-killing proposition. I cover them up with straw, and they seem to come out all right in the spring. (Applause.)

Mr. Elliot: What about plums?

Mr. Grimes: I have quite a good many varieties of plums in the orchard. A year ago last summer I think I had three or four bushels of plums; in fact, some trees had too much fruit on, and the wind and the large crop together broke them. I have found the De Soto to be the most satisfactory, because it is less liable to fail in bearing a crop. I have the Wolf, the Forest Garden and a number of other varieties, but the DeSoto has proven the most satisfactory.

Mr. John Doolittle: Speaking of blackberries, I have a small patch of half an acre, and last year I sold from it \$228 worth, and two years ago I sold \$212 worth, and all I did was to tip them over and cover them with hay. I covered them with straw, but the wind uncovered them, so I think it is better to cover them with hay.

Mr. C. W. Merritt: If you take a shovel and dig a hole alongside of the blackberry vine, and then take a four tined fork and bend the vine so it will bend in the root, three men can cover an acre of berries in a day, and they should be so thoroughly covered that you can drive over them with a disc harrow.

Mr. H. J. Baldwin: It seems to me Mr. Grimes ought to reverse his row of blackberries, or he will have his eyes scratched out. (Laughter.) I find I can cover them quicker by just tipping them over, and I have never had any trouble with winter-killing, or any trouble with mice, rabbits or anything of that kind. I find, too, when I tip them over in the latter part of October, when there is a good deal of sap left in the wood, there will be practically no loss at all from broken canes. I believe I can cover them quicker with earth than I could haul straw or anything of that kind. In tipping them over I would not think of using a shovel or loosening the root, because you cut off a lot of tap roots, but I take a spading fork and throw out the dirt that is necessary and then push the plant over with the fork, and when I tip it over I have an iron two feet long with two prongs, so it will spread ten or twelve inches, and I just put that over the vines to hold them down while I put on the dirt. One man can go right along with that method and put down a lot in a day. When I put mine down I do not think of breaking more than one or two canes. I cover them up with dirt and never lose them at all.

Mr. C. E. Older: I want to say just a word in regard to a point mentioned by Mr. Grimes, and that is in regard to the boy in the apple orchard. I planted Yellow Sweets next to the highway. One of my neighbors says, "It is no fun stealing from Older, he doesn't care anything about it." This year it kept a man busy selling to boys that came along with a dime or a quarter, and we sold them right from the tree. I never had any trouble with boys stealing apples or plums or anything of that kind, but ladies are twice as bad as the boys. (Great laughter.)

The Chairman: I am surprised at Mr. Older. I had a better opinion of him. (Laughter.)

Mr. J. O. Weld: I find that is true in my garden at Lake Minnetonka. The worst people I have to contend with are the ladies that come along the road. (Laughter.) I would like to ask Mr. Grimes a question. He spoke of his plants winter-killing. I want to ask him whether he set out new plants or let them come up from the roots.

Mr. Grimes: I let them come up from the roots.

Mr. Elliot: A blackberry patch set out and properly maintained is good for ten years at least.

Mr. A. K. Bush: I would like to emphasize the suggestion of putting down blackberries early in the season. The canes go down then without breaking, and the leaves that are still on the vines assist in holding the plant down. I find there are more failures on account of doing this work too late than there are from doing it too early.

Mrs. Spates: I would like to ask Mr. Grimes what variety of blackberry he grows?

Mr. Grimes: It is the Ancient Briton; so it is reported to me at least.

Mr. Merritt: If the gentleman will take a pair of heavy mittens and put on a good pair of overalls in laying down his blackberries he will find it preferable to any kind of iron.

Mr. Baldwin: Yes, but then you have got to have somebody to help you. If you work by yourself in the way I have mentioned you can do as much as two men. The iron holds down the vines while you put on the dirt.

Mr. Merritt: I suppose you have reference to doing the work yourself and putting them down alone.

Mr. Baldwin: Yes, one man can do it just as well as two. It brings the vines together in one place and holds them down while the covering is put on.

Mr. Nils Anderson: You tie the tip of the first hill to the root of the second, and the tip of the second to the root of the third, and so on, and that is the easiest way to get them down.

Mr. W. L. Taylor: I would like to ask Mr. Grimes in regard to his blackberry vines, are they tall or short?

Mr. Grimes: They are quite tall, from five to seven feet tall.

Mr. Taylor: My plants of that kind are not like that. I think it is a different variety. The tall plants are the Snyder variety; the Ancient Briton are short.

The Chairman: But he has them on moist land?

Mr. Grimes: Yes, sir.

Mr. Taylor: When do they ripen?

Mr. Merritt: With me the Ancient Briton will bear three times as much as the Snyder. When the plants are about that high (?) I pinch out the top, and they will make strong canes.

Mr. Grimes: They commence to ripen about the first part of August.

Mr. A. Brackett: What is the color of the berries when they are green? (Great laughter.)

Mr. Grimes: My recollection is that the color is green. (Renewed laughter.)

Mr. Brackett: The Snyder is of a reddish color when growing, and the Ancient Briton is green.

The Chairman: The stalk is green when growing.

Mr. Westman: I want to say a word in reference to covering blackberries early. I had a good row of Lucretia dewberries, and I took the advice of Mr. Bush and covered them early, but I have no more blackberries.

Mr. Baldwin: The point is not to cover them with dirt, but put them down to keep them in place and then cover them with dirt after it is frozen. It is very easy to cover them then.

Mr. Preston McCully: I think that is a mistake about the time of covering. Out in our section we aim to put down almost everything except the King and Loudon. One fall a neighbor put down the Loudon early, and I put mine down late, and that fall we had particularly warm weather, and those that were put down early nearly all winter-killed. They ought to be put down as late as possible. I prefer not to put them down until the 20th of October.

The Chairman: Do you tip them over or cover them?

Mr. McCully: I put them down and cover them over entirely.

Mr. Latham: You would be afraid to put them down when the leaves were on?

Mr. McCully: No, I would not. Some commence to put them down the first of October. I believe that is too soon.

The Chairman: It would be all right to put them down just to hold them?

Mr. McCully: Yes, that would be all right.

Mr. Older: Some people cover them too deep. A gentleman said he had a nice strawberry bed by spreading hay over them thinly in the fall and then covering them deep after it froze. I never missed but one crop in twenty-five years. Whenever we cover lightly early in the fall we never have any trouble with our strawberries. Put a little hay over them before the first frost comes and then after it freezes cover them deep for the winter. I see everybody advises covering them when the ground freezes.

Mr. Bush: I said not before the ground freezes, but after the first frost comes.

THE ADVANTAGE TO THE MINNESOTAN OF PLANTING HOME GROWN STOCK.

W. L. TAYLOR, HOWARD LAKE.

The people who settled in Ohio, Indiana, Illinois and other middle states found no trouble in starting orchards from eastern nursery grown stock. They could buy from almost any nursery and their trees were equally at home and would grow and bear fruit. But Michigan and Wisconsin settlers had more trouble to grow stock purchased from other states. The first settlers of Minnesota soon began to try eastern and southern grown trees, but their failures were so total and complete that most of them gave up in despair and said "We shall never raise apples in Minnesota." Many of the old members will recall the words of Horace Greely when he said "I would like to live in Minnesota, but you can never raise apples here."

But a few more courageous ones began planting apple seeds, and some success was had with a few of the Russian apples, especially after they had been grown for a few generations and had

What Minnesota grown trees will do in five years.
In orchard of J. A. McVeety, Howard Lake

become acclimated. The seedlings also seemed to increase in hardiness as the years went by, and they became more adapted to our rigorous climate.

The Minnesota nurserymen has kept busy selecting the hardy and rejecting the tender varieties, so that while he has not such a long list to offer his patrons as the eastern or southern nurseryman he can certainly furnish stock adapted to the climate, so that

it will surely be to the interest of every Minnesotan to plant nothing but home grown nursery stock.

Another fact should be taken into consideration, the home nurseryman is interested in giving you trees that will grow and bear fruit, for he expects to not only sell to you again but to sell to your neighbors and friends if your trees give satisfaction. He will undoubtedly give you the best, for if your trees do well his sales will be increased. He is also willing at all times to give you instruction in planting, pruning and caring for your stock, and if he were consulted oftener many of the high priced novelties would not be purchased. Trees from the home nurseries are more apt to be fresher and the roots moist than those from a distant nursery, and if a mistake occurs, as mistakes sometimes will, you can go and get it rectified. If you buy of your home nursery, your money is in the community and still helps you to bear the common burden of taxation.

The Chairman: You have heard Mr. Taylor's paper in which he points out the advantage of planting home grown nursery stock. He has covered the points well, but if there are any other points he has omitted which any one desires to suggest we would be glad to hear them. This reminds me of a minister who wanted to get some apple trees and wrote me about buying them at Rochester, N. Y. I told him I thought he had better not buy his stock at Rochester, and he sent that letter to Green, of Rochester. I know Green very well, and he sent that letter right back to me and asked me what kind of business that was. I was up against it. I wrote him like this: I told him that man lived in a section where the climate is very severe and what he needs is the hardiest kind of varieties, and named Hibernial, Charlamoff, Patten's Greening and some that I was very sure he did not have, and I tried to make it plain to him that anything else would not stand. There are good reasons for this, and it seems to me they ought to be brought out here, and now is a good time to do it.

Mr. Chas. B. Clark: Would it be wise for people in North Dakota to buy their stock in Minnesota or would it be better to buy it from our friend in Manitoba? (Great laughter and applause.)

The Chairman: I think we ought to call on Mr. Scott at this point.

Mr. Wm. G. Scott (Manitoba): I am not in the nursery business at the present time. Some three years ago I saw some beautiful apple trees at Portage la Prairie that were brought from Rochester, N. Y. They were protected on the south by a high board fence, but they were beauties. Mr. Buzzell tells me that over in Manitoba there are trees that were imported from the east for the purpose of grafting on nursery stock. We hope to send some of our stock to Minnesota and North Dakota.

Mr. W. L. Taylor: I live in Meeker county, and there were

men there from New York selling stock from the time the county was first settled up to ten years ago. Ten years ago I offered to give any man a dozen apple trees who would show me an apple tree that came from New York and a dozen apples it had borne. No one has yet called on me for the trees.

Mr. Geo. H. Whiting (S. D.): Mr. Taylor might get fooled on that proposition yet. (Laughter.) I know it is a fact that the greater portion of the apple trees that are sold by Rochester people are grown west of the Mississippi river, a great many of them west of the Missouri river. What I want to ask is whether the people living in western Minnesota, South Dakota and other states want us to raise apple trees and send them to New York and then have them shipped out here and sold. I would like to know why they prefer that kind of a tree grown under those conditions. We that are in the business and know what is going on know that the greater portion of those trees are grown west of the Mississippi river. The greater portion of trees shipped from Rochester are grown out here and then reshipped. Ask any of the leading nurserymen about it; they know.

Mrs. Jennie Stager: I had a little experience with New York trees. I wanted to grow some apples. I sent back to Pennsylvania for some trees and also got some from Rochester, N. Y., but the trees kept dying, and I got no fruit. About that time I came across an announcement of this society, and since then I have raised apples. I tried very hard for five years to grow apples, but none of those trees lived and bore until I got Minnesota stock. (Applause.)

Mr. A. A. Johnson: I bought five hundred trees from a Missouri nursery. There were sixty Duchess, and out of that number one-third died, and it looks as though the rest of them would also die.

Mr. E. A. Smith: A general impression prevails that trees grown in the east are not a success in the northwest. May this not be the reason in the first place? Perhaps they do not have the varieties that are adapted to the northwest. Their methods of propagating are somewhat different. Take the plum for instance. The plum if grafted on the peach or on some tender root here in the northwest we find will winter-kill, but here we graft it on the wild plum, and that is as hardy as we need. The same illustration may perhaps apply in this case. Perhaps they also grafted upon more tender apple roots, and owing to the longer season the graft is not tough in fiber, so that instead of ripening to the very tip perhaps there is considerable left that will winter-kill when transplanted, especially the first season.

The Chairman: There is one point not touched upon why we should buy from nurserymen in Minnesota in preference to nurserymen at a distance, and that is that a nurseryman at a distance seldom know the requirements of a Minnesota climate. Most nurserymen in Minnesota know their customers, and they want their nursery stock to be successful wherever it is planted, and they find there is more or less in selection with reference to the climate. A nurseryman that has stock here naturally has stock adapted to this

section. A person gets in touch with eastern nurserymen and makes a selection from their list, and it may happen to be a lot of stock that is not hardy here. Several years ago a lady in St. Paul wanted a farm, and she asked my advice as to how big a farm she ought to get. I asked her how much money she wanted to spend. She told me, and I gave her the advice I thought she needed. She smiled about it and went away. Somebody else gave her some advice about planting trees, and she bought a place of ten acres. Last winter her daughter came to see me and ordered a lot of nursery stock. She said her mother did not want to come to see me because she was ashamed. There was an agent around to their place and sold them a lot of Kelsey plums, Royal American cherries and other stuff of a similar nature, and she was done up to the tune of \$100. Those plums went in at a dollar apiece, and there was a clause in the contract that stated those plums were adapted to Minnesota, and what she wanted me to do was to help her get out on that contract. Even if a nurseryman is honest he may give the wrong advice to his customers in regard to varieties, and they are very apt to get a lot of stock that is not adapted to this climate.

Mr. J. M. Underwood: Some gentleman asked the question whether trees grown in the east or south of the same variety as the Wealthy, for example, whether they would be adapted to planting here in the northwest the same as Minnesota grown trees or trees grown in North Dakota. I think the question was barely touched upon this morning in the question of adaptation, of the tree being adapted to the locality in which it is grown. I believe it is reasonable to suppose that trees grown here are acclimated and better adapted to be planted here than those grown in the south or east, perhaps under different climatic conditions. I know it is true in regard to the animal kingdom. It is generally said we cannot bring mules into Minnesota and use them to advantage, that horses are better than mules. Mr. B. F. Nelson told me a few days ago that horses would do better than mules, that it had been demonstrated that mules could not be used to advantage. We who have been buying mules are going through some experience in regard to that question, and I think Minnesota raised mules are better than Missouri grown mules. On that same principle of adaptability to the climate, that mules are better adapted to the climate when raised in Minnesota, I think we can claim that the Wealthy and Duchess apple tree grown here in Minnesota is better adapted to planting here in the northwest than southern and eastern trees grown under different climatic conditions, and I think that is the point the gentleman was inquiring about.

Mr. A. Brackett: I have always understood that the Wealthy apple, whether grown in the north or south as far as hardiness is concerned, planted on the same kind of root, there would be no difference in its hardiness. It takes years and years to change the hardiness of an apple. I think Prof. Hansen brought up that point last year. The only trouble in buying a tree grown in the south is that it is liable to be grafted on a tender root, and it is likely to winter-kill, but as far as the original stock is concerned it does not make any difference.

Secretary's Corner.

DEATH IN OUR RANKS.—News has reached this office of the decease of R. E. Hynson, which occurred at his home in Mankato a short time. Mr. Hynson was a successful fruit grower and nurseryman. He had been a useful member of the society for some years, doing readily what came to hand in its service.

THE WILLMAR HORTICULTURAL IMPROVEMENT SOCIETY—was organized in January, 1905, with twenty-one members. At the close of the year the membership had increased to twenty-five members. A report received from this society a short time since indicates that the interest in the organization is maintained and that the society is well supported by the community. Two delegates represented that organization at our late annual meeting.

REMOVAL OF MARTIN PENNING.—Martin Penning, now for nearly a lifetime a resident of Sleepy Eye, has bought a small tract of land in New Ulm and will make his home there hereafter. He has secured what he considers a fine place for an orchard and fruit garden, which he purposes to plant this spring. Mr. Penning is well known to the members of this society, especially from his large experience in plum growing and also as the originator of the "Surprise plum." Now he is off the farm we hope to see more of him at our gatherings.

DESIRABLE NATIVE CLIMBING VINES.—Mr. Chas. E. Chrisman, of Ortonville, sent to this office lately a picture of his home, showing an arbor and porch profusely covered with wild native vines, which he informs me are woodbine, wild grape and bittersweet. All these varieties are native in Minnesota, entirely hardy, being rapid growers with handsome foliage and attractive fruitage. They are especially well adapted for screens, trailing vines, etc, wherever they can be used to advantage. Their proper use adds very much to the external attractiveness of the home.

APPLES FOR WASHINGTON.—Mr. Andrew Wilfert writes from Seattle, where he has been spending some time this winter, that the lecturer for horticulture for that state recommends only six varieties of apples for that state. They are, for fall, Gravenstein, Roman Beauty; and for winter, Spitzenberg, Red Cheek, Winesap and Arkansas Black. He says that "they have all the destructive insects known to horticulture and spray their trees three times each season and the trees are wrapped in burlap and examined every ten days." Mr. Wilfert expects to be home to look after his orchard about the first of April.

NEW LIFE MEMBERS —Quite a number of names have been added to the life membership roll of the society since the last annual meeting, as follows: J. A. McVeety, Howard Lake; C. H. Andrews, Faribault; Robt. A. Van Nest, Windom; B. F. Nelson, Minneapolis; F. W. Baird, Gaylord; J. G. Peterson, Kensington. There should be five hundred names on this roll instead of one hundred seventy. Payment can be made \$5.00 now and \$5.00 a year later instead of paying the full amount at once if preferred, and if the annual fee of \$1.00 has already been *paid for this year* that amount can be deducted from the first payment, making it only \$4.00. This means *you*.

MALINDA APPLES WITH FOUR SEED CARPELS.—Mr. Wyman Elliot, in taking the seed from the Malinda apples purchased from Mr. Seth Kenney, has occasionally found one with only four seed carpels, which is so much out of the ordinary that it has been brought to the attention of some of our seedling experts to get their thought in the matter. Prof. Hansen says that he "believes Mr. Elliot is right in his idea that the species is 'wabbling,' though it may be a case of imperfect pollination. It is just such fine points as this that Mr. Burbank would sieze on and get unexpected results" Following this thought, it would be well for our members to save seed for planting from any specimens that show unusual variations from the regular type.

VALUABLE FOR GROWING SEEDLINGS.—A correspondent, Mr. John Bisbee of Madelia, notes that "the Malinda remains in blossom a long time, new blossoms coming out for a week or more. This fact makes favorable results more possible, especially if trees are surrounded by late keeping varieties, as my trees are." In another letter Mr. Bisbee speaks of his Malindas having the opportunity of being fertilized with "Baldwin, Wolf River, Peerless, Duchess, Roxbury Russett, Anisim, University, Wealthy, Boiken, Grimes' Golden, Orange Winter, Longfield, Seek-No-Further, Northwestern Greening and others." Mr. Bisbee is planting a considerable quantity of this seed, we understand, and a small amount has been sent to this office also for distribution.

A. W. SIAS MOVES TO MISSOURI.—A recent letter from this old and honored life member recites the fact that he has changed his residence from southern Florida to Pomona, Mo., which, we take it, is somewhere in the southwestern part of that state. There he and his son, E. D. Sias, have purchased forty acres of land already planted in part to fruit, and he has rechristened it "Pomona Memorial Park," according to the quaint way of our friend Sias. It is to be suitably adorned and to be the beauty spot of that region, we judge, if his plans materialize. Mr. Sias speaks in the letter of his early acquaintance with O. V. Rollins, of Elgin, Wabasha Co., Minn., the originator of Rollins' Pippin, the seed producing which he figured out to have been planted sixty years ago. Mr. Rollins must have been an odd person, as his friends called him "Odd Rollins", this, as per Mr. Sias, not standing for his real name but on account of a peculiar twist of his nature.

COMBATING THE BUFFALO TREE HOPPER.—Referring to a sample of apple tree wood infested with this insect, from the orchard of W. S. Albrant, of Mankato, Prof. F. L. Washburn, State Entomologist, says: "Pruning off the infested twigs and small branches and burning the same, where they are not too large, is desirable. Of course this refers to limbs in which eggs have been recently laid. Where the scars indicate an injury of long standing it would manifestedly do no good to trim off and burn the limbs. Clean cultivation of an orchard, and the destruction of all rubbish, particularly along fence rows and adjoining lands, has much to do with keeping this pest in check. It is not commonly troublesome in a well cultivated and cared for orchard. I wish to urge fruit growers and nurserymen through your magazine, to use Bordeaux mixture freely and intelligently in combating many forms of fungous troubles, which are gathering strength each year in this state. Faithful work along this line will undoubtedly reduce the ravages of various fungous diseases, and at the same time help to keep in check such pests as the buffalo tree hopper the green tree hopper, or leaf hopper, plant lice, etc."

HALF-TONE PLATES FOR SALE.—The plates used in illustrating our magazine can as a rule be secured at one-half the cost of making. Anyone having use for them should communicate with the secretary soon after using to be sure of getting them.

MEMBERSHIP ROLL FOR 1906.—At the date of writing, March 22, the annual membership in the society stands at 1559, which is 137 more than the membership roll showed a year ago at the same date. Haven't you a neighbor or friend who would be benefited as well as benefiting the society by having his name placed on the roll?

A CHAMPION FOR HIBERNAL.—"I have just read the adverse report of the Hibernial Apple on page 117 of the last Horticulturist and want to register my protest. Every apple has its use and value. The Hibernial, cored and baked whole, with teaspoonful of sugar placed in center where core was removed, is one of the finest apples baked, and the writer always selects out a good supply of the largest and finest colored ones for this purpose, and when served in manner described, with thick cream and sugar, they are truly delicious. The reputation of the Duchess is based entirely on its value for pies and for stewed sauce and certainly has little merit as an eating apple. If the Hibernial apple tree was sold by nurserymen on its merits as an eating and cooking apple there would be a large place for it in every family orchard and also a good sale for it for a long time to come. Our salesmen are all urged to push the sale of the Hibernial tree and also to carefully give the buyer information as to the true use and value of the apple and the sturdy rugged hardness of the tree, also its young, annual and prolific bearing qualities."—A. H. Lake, Black River Falls, Wis.

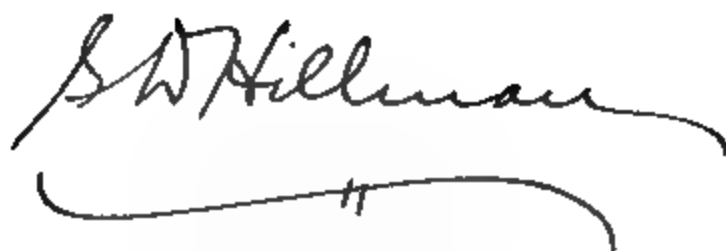
A CORRECTION BY GEO. H. MAXWELL.—"The extract appearing on page 25 of January (1906) Horticulturist was taken from the newspaper reporter's version of what I said and, like all such reports, was intended to give the substance rather than the words. Without any intention to misrepresent, the reporter who prepared this article made me say things which were not an accurate version of what I actually did say. It was *not* drainage, but the cutting off of all the trees for the benefit of timber speculators on which I placed the greatest stress when I referred to the subject of an automobile road. What I had in mind when I referred to drainage was the country immediately adjacent to Cass Lake and not the whole of northern Minnesota. The latter interpretation has been put on the words "northern section" used by the reporter, and the effort has been made to make it appear that I was opposed to drainage anywhere in northern Minnesota. That is entirely a misconception of my position. I recognize as well as anybody that there are immense areas of land in northern Minnesota—more particularly in the Red River Valley drainage basin—which could be drained with great advantage and enormous profit. On the other hand, I understand there is a great deal of what is called "muskeg" and sandy land, which must be put in an entirely different class from the rich alluvial soils of the Red River Valley."—George H. Maxwell.

ABOUT THE SEEDLING CONTEST.—Up to this date, March 23, there have been received in this office 187 applications for apple seed to be planted by participants in the new apple seedling contest, and many are coming in every mail. Seventeen formal applications have been received so far from those who wish to enter for this contest, and twenty two names have been entered on the roll of the Plant Breeders' Auxiliary. Applicants for seed should understand that this does not constitute an entry for the contest, which should as far as possible be made on the blank form provided for that purpose, any number of which will be furnished without expense by sending to the secretary. It will be just as well to make this entry after the seed is planted and growing, and it may be made at any time not later than a year after the planting of the seed, although it is better made as soon as possible.

SECURING NEW MEMBERS.—The following is a list of the names of those members who have secured new members for the society since the last annual meeting and the number secured up to March 17, 1906.

G. W. Strand.....	8	Hans Stensrud.....	1
L. B. Arnold.....	2	J. P. Berge.....	1
S. L. Bohanon.....	1	W. H. Eddv.....	11
Mrs. H. A. Boardman.....	11	Wm. Anderson.....	1
T. E. Cashman.....	17	Dr. A. E. Johnson.....	1
Otto Kankel.....	7	Ole P. Onstad.....	1
J. A. Champion.....	2	C. F. Greening.....	1
C. H. Durose.....	1	S. H. McAdams.....	1
G. F. Grannis.....	1	G. W. Kolosky.....	1
U. G. Herrick.....	4	A. K. Bush.....	1
A. W. Sweet.....	1	So. Minn. Hort. Society.....	42
Garrett Van Ness.....	1	E. H. Brady.....	1
Aug. Hillger.....	1	Richard McComb.....	3
E. Bonde.....	1	F. J. Cooke.....	2
J. V. Wichler.....	3	C. J. Manner.....	2
Jewell Nursery Co.....	4	T. E. Perkins.....	1
F. F. Farrar.....	3	S. B. Rhorer.....	1
W. J. Tingley.....	1	State Forestry Ass'n.....	6
R. A. Schutz, Farmers' Institute.....	253	Kandiyohi Co. Society.....	30
T. T. Bacheller.....	4	C. H. Carlson.....	4
Leroy Ritchie.....	7	W. G. Scott.....	1
Mrs. J. Stager.....	1	A. P. Young.....	1
W. L. Taylor.....	2	O. K. Berget.....	1
W. C. Davidson.....	1	T. K. Dahle.....	1
D. H. Coles.....	2	A. H. Gates.....	1
E. H. Thompson.....	1	E. C. Eaker.....	1
Ed Nehring.....	1	Mathias Anderson.....	1
D. M. Mitchell.....	1	A. H. Briest.....	3
J. H. Heimark.....	1	T. E. Tostenson.....	2
Geo. S. Neison.....	1	N. J. Aanes.....	1
H. Klauser.....	1	W. H. Jones.....	1
Fr. Yahnke, Farmers' Institute.....	102	Rev. P. Knudson.....	1
Miss Hazel Burton.....	1	H. Harby.....	1
C. A. Anderson.....	1	Harry Wise.....	1
P. A. Christianson.....	3	D. C. Smith.....	1
Fred Mohl.....	1	J. L. Nydahl.....	1
John Kolbert.....	1	M. J. Moshier.....	1
H. H. S. Rowell.....	2	Leonhard Fritze.....	1
LeRoy Cady.....	2	H. C. Arnes.....	1
T. A. Hoverstad.....	6	J. F. Benjamin.....	1
M. A. Eliason.....	1	P. C. Peterson.....	1
Geo. R. Peterson.....	1	John Conrad.....	1
V. A. Neil.....	2	R. H. Pendergast.....	2
T. E. Chesney.....	1	E. A. Heifort.....	1
J. C. Becker.....	1	John Penney.....	1
Edw. Moehlenbrock.....	1	A. E. Swedberg.....	2
J. P. Andrews.....	9	Jac Brynildsen.....	1
R. A. Van Nest.....	13	S. R. Mighton.....	1
F. E. Schotzke.....	1	Oscar Carlson.....	2
J. S. Decker.....	1	Erick Omland.....	1
C. E. Johnson.....	1	O. M. Peterson.....	1
Dr. A. Sohlberg.....	1	M. L. Branson.....	1
John Bisbee.....	24	Rev. Z. L. Chandonnet.....	1
A. W. Barker.....	1		

Is your name in the above list? Another list will be published in a month or so, when we hope to find it there.

A handwritten signature in cursive script, reading "S. W. Hillman". The signature is written in dark ink and is followed by a long, horizontal, slightly wavy line that ends in a small hook.

Late of Minneapolis, Minn.

Secretary of Minnesota State Horticultural Society, Five years, 1885-1889.

THE MINNESOTA HORTICULTURIST.

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No. 5

In Memoriam.

SILAS DAYTON HILLMAN.

Died Nov. 27, 1905, Aged Sixty Years.

Silas D. Hillman, third in a family of seven children of George Washington and Chloe Dayton Hillman, was born at Greenwich, N. Y., September 23, 1845, and died at Minneapolis, Minn., November 27, 1905.

Beautiful for situation was the old farm home, overlooking the grandly picturesque valley of the Battenkill, whose sparkling water winds in and out among green hills. To the east rise majestic the Green Mountains of Vermont, visible for half the length of that state; on the west, somewhat dimmer and farther away, the mountains of Saratoga and the frowning peaks of the Adirondacks.

Here till twenty-one years of age he daily served, from the time he could hoe a row or draw a line, from the tapping of the first sugar-maple till the last ear of corn was husked and housed, when winter's snows gave him a short respite to attend the district school. At eighteen he had learned all that was taught in his native school, at nineteen he taught in an adjoining district, and the next winter taught in his home district the "best school they ever had."

At about sixteen he heard of shorthand, and, obtaining a standard work upon the time and labor saving art, his enthusiasm and application were such that in an incredibly short time he had transferred most that was valuable in theory and practice to his own brain and fingers. His dictation practice was obtained from the sermons he heard on Sundays in the Methodist church at Greenwich. He never could have truly sung with Watts, "Much of my time has run to waste," for he never wasted any; and this habit of saving time clung to him through life. Every moment was enriching his mind. He never sat without book or pen unless in converse with a friend. His life on the farm yielded him, too, its tribute in time for meditation. He kept a diary and wrote poetry. Safe to say he

never turned a furrow on the old farm or in later life without at the same time turning in his mind some stanza he had learned or improvising some happy rhyme, and this verse-making and diary-keeping habit continued to the end. Many of his poems have found their way into print, which many his friends recall and treasure.

His self-wrought education in the years of his minority furnished him funds with which to carry out the advice of the great editor of the New York Tribune (one of the family papers) "Go west, young man, go west!"

From Waukon and Decorah, from time to time, letters reached home, one enclosing an eight-shelled rattle. When at length from Minnesota letters reached the home-folks, they felt he had become a pioneer indeed, for stories of Indian massacre had reached them, and the mother breathed a genuine sigh of apprehension for the safety of her far-away boy—the Indians of Minnesota were more sincerely dreaded than the rattlesnakes of Iowa.

In 1875 he located in Rochester, Minn., and became part owner of the "Record and Union," an influential newspaper, which for several years he assisted in editing and managing.

In 1873 he reported an important law suit at Rochester.

In the winter of 1874-5, while acting as enrolling clerk of the House, he prepared and secured the passage of a general law authorizing the employment of shorthand reporters in the district courts of the state. Under this law he served in the Rochester district as official reporter for about sixteen years.

In 1882 he removed to Minneapolis, and for several years was on the reportorial staff of his brother George, at St. Paul, later serving for twelve years as the official reporter for Judge Chas. M. Pond, of Minneapolis. For five years (1885 to 1889) he also acted as secretary of the State Horticultural Society, and reported its annual conventions, performing with fidelity all the other varied duties of the office.

Mr. Hillman's life and character were an open book. Modest, unassuming, enjoying quiet humor, generous, seeing the best in every one; loving and tender in his home; kind to all, especially those in need; honest, unostentatious in his piety, a faithful friend, a Christian gentleman.

June 2, 1870, he was happily married to Miss Marilla J. Somerville, of Viola, who survives him, as do also two sons, Lloyd L. Hillman of Seattle, Wash., and Walter S. Hillman of Kramer, N. D.; a daughter, Miss Ada B. Hillman, Wisconsin state secretary of the Y. W. C. A., and two brothers, George N. and William Hillman of St. Paul.

May and June Calendar.

THE FLOWER GARDEN AND LAWN IN MAY AND JUNE.

MRS. F. H. GIBBS, ST. ANTHONY PARK.

What is more pleasing to the eye after the long winter than to look out and see the lawn a perfect bed of green. The lawn then, should be the first to draw our attention.

Of course, all lawns properly taken care of have had a covering of old barnyard dressing or of some commercial fertilizer, and are now, the first of May, in good condition. All low places should be filled with dirt, and the grass will soon peep through. Places where the grass has been killed should be raked and sown with lawn grass mixture. In watering be sure and soak the ground down to the roots, as a little is an injury rather than a benefit. Clipping with the lawn mower will help in spreading the roots. By looking after these little things every spring, our lawn will always look well.

Those planning new lawns will be better satisfied by sowing them with a good lawn grass mixture than by sodding. To make a good lawn, get the ground plowed and well pulverized, then rake smooth, sow the lawn grass seed evenly and roll it well with a roller. If the work is done thoroughly you will have a nice, even lawn, and one that will always be green, because you have different grasses that will come in their time, while sodding is usually only one kind of grass and will dry out and get brown. The lawn should be made before this time, but if it has not been it can be done now by giving it more water than you would have done earlier.

The next thing we think of are the trees and shrubs. To arrange trees, shrubs and flowers so that they will harmonize is a work that we must study well. Trees and shrubs are not planted in rows now, as they used to be, but in groups. Hydrangeas, spireas, syringas and snowballs are very pretty used in this way. Spirea Van Houttii is one of the most beautiful shrubs we have. There should be at least one on every lawn. Rosa rugosa makes a very pretty bush, singly or used in a hedge, Rubra being red, Alba white. They show off nicely by using the two, as the foliage is a glossy dark green, and they bloom nearly all summer.

Among the trees we would have set singly are the hardy catalpa, cut-leaved birch, mountain ash, maple and spruce.

For a hedge, buckthorn or red cedar. The arbor vitae makes a very pretty hedge or screen but must have a protected location.

Home of Mrs. F. H. Gibbs, St. Anthony Park

A group of mixed evergreens look very pretty and are nice in winter when the other trees are bare.

All roses do best planted in the spring. I would prefer planting in the hedge row, leading from the street back into the garden, as they are much easier to cultivate, to cover and uncover. Plant the shorter ones in front and grade them back according to height. All roses except the yellow and climbers should be pruned back half, as they bloom on the new wood, the yellow blooming on the old wood, and the climbers on the side shoots.

The hydrangea should have half of the new wood cut out, and all weak branches.

The *perennials* are Japanese anemone, coreopsis lanceolata, columbine, campanula, foxglove, larkspur, bleeding heart, gaillardia, hypericum, forget-me-not, phlox, poppies, platycodon, pinks, peonies, pyrethrum, Shasta daisy, and all the different kinds of lilies. Many of these are better for being planted in the fall; especially phlox and peonies are about a year ahead by doing so. A very pretty way to use perennials is in a border along a driveway or in a bed having irregular lines next to a building.

All driveways should be laid out in graceful curves, and using a shrub at the back, here and there, with larkspur, foxglove, phlox and pyrethrum as a background, grading all other perennials ac-

ording to height, and using lobelia or sweet alyssum as a border. The driveway may be made to look like a road with a bank of flowers on each side.

I believe that nearly all the perennials I have mentioned bloom in May and June.

May 15th the tulips are at their best, being planted in October. Every one should have a bed of tulips, as they are so bright and coming first of all flowers they are very desirable flowers to have. Have them out in front on the lawn where every one can enjoy them. When they are through blooming and the leaves turn yellow, they may be taken up and kept in a dry place until October, when they may be planted again. Some leave them where they are and do not use the bed for anything else, but I always have red geraniums in their place.

A large, round or oblong bed of cannas graded as to height, with salvia and coleus as a border, makes another pretty spot on the lawn.

Gladioli and dahlias should be put out by the middle of May. Gladioli should be planted three inches deep and one foot apart. They may be used in a bed or in a row, and they need to be staked. Dahlias are planted six inches deep and four feet apart, if you have room. They are prettiest in the hedge row. Break off all but three or four shoots. Some say "Grow by the single stem." I tried them both ways this year, but it was a bad year for dahlias, and so I could not say as to the best method. I do know that the flowers are larger when you do not have too many branches.

We should also raise dahlias from the seed. The seedling dahlia should take the same place in the flower garden that the seedling apple does in the orchard, for we often get a gem in this way.

We now have the *annuals* to dispose of. These are all transplanted and have good, strong roots, and are ready to be planted out in the garden, as all danger of frosts, or at least severe ones, is over by the twenty-second of May. Some of the flowers were sown as early as January. It is taken for granted that you all have a small hothouse or hotbed for raising plants, and if you have none you should make one, or buy your plants of some one who raises them to sell, as they are so much earlier.

Some of the annuals are asters, salpiglossis, carnations, dianthus, pinks, everlastings, pansies, coreopsis and snapdragon. Annual phlox, petunias and verbenas certainly are flowers we all must have, as they give the best results for what care they get of all of the annuals. Cosmos, centauria, portulaca and poppies are to be sown out-of-doors.

While planting our annuals be sure and have lobelia, sweet alysum and mignonette as border plants. Those who have not used them, try them, and you will always have a border for each walk.

The sweet peas being planted about the first of April are up nicely and need their support. The dirt should be drawn up to them, and if they were planted in a place carefully prepared and enriched will grow to be from six to eight feet high. The earlier sweet peas are planted the deeper the roots will go, and you will have greener foliage and larger flowers.

Let us have an arbor or two and use some of the pretty climbing vines. The clematis paniculata is a beautiful vine, and there are the cinnamon vine, morning glory, hardy moonflowers and all of the ivies.

Every spring my husband will say, "What are you going to change this spring?" Perhaps no one else finds this shrub or that plant in the wrong place, but I do. I think we amateurs should always be on the lookout and study every lawn and flower garden we pass, and see where we have made a mistake, or where some one else has failed, and why? For we all have failures in our gardens—I know I had one last summer. Let us see all flowers in bloom before buying, and when we go where there are nice flowers take a note book along.

I have mentioned quite a large number of flowers. Choose those that you like and that will do best in your garden. It is better to have a few nice ones than a great many poorly taken care of. We should take good care of our lawns and flower gardens, as they count for so much in the appearance of the home.

Prof. Washburn: I would like to inquire of Mrs. Gibbs whether she used Bordeaux mixture on her asters.

Mrs. Gibbs: I used it three or four times, but I do not believe I had one perfect blossom. I mulched them, and I did everything that anybody told me to do.

The Chairman: What seemed to be the trouble? You call it blight.

Mrs. Gibbs: I think I had more than one trouble with asters. One thing, they would turn brown, the leaves would become spotted, and especially the large plants that had large leaves at the branching point would blight the worst; I noticed at the branching point there was a little spider, and I think that had a good deal to do with killing them.

Mrs. Hansen: I had 1,400 asters last year, and I used Bordeaux mixture to spray, and I think I picked at least five thousand flowers.

I had those brown specked leaves, but I did not think it would do any harm. When the plants were six to eight inches high I began to put on Bordeaux mixture; I did that once a week, but I did not get as good results as I expected. I saw the aphids at the root of one, and I used tobacco, but it did no good.

Mrs. Loring: In her recommendation of mignonette I would like to know whether she was troubled with caterpillars?

Mrs. Gibbs: I was not troubled this year, it was all right.

The Chairman: You refer to those small brown caterpillars?

Mrs. Loring: Yes, sir.

Mr. Loring: Did you examine the leaves of the asters under a microscope?

Mrs. Gibbs: No, sir, I did not.

Mr. Loring: We examined ours, and they were covered with the smallest kind of a mite. They could not be seen with the naked eye.

Mrs. Gibbs: I have raised asters every year and had nice flowers, but this year it was a perfect blight. I got a good many flowers in the beginning, and there was no reason I know of why I should not have had plenty of asters.

THE SMALL FRUIT GARDEN IN MAY AND JUNE.

E. A. FARMER, MINNEAPOLIS.

This subject to me, and, I presume, to many others here, is of great importance, as the raising of small fruits forms a large part of my business, and also adds much to the commercial interests of our state. The small fruits I grow are strawberries, blackberries, raspberries and a few currants and gooseberries.

The planting of small fruits is mostly, or should be, finished by the first of May. Commencing with strawberries, we will suppose the new patch is planted and the old one all uncovered and they have nothing to do but to grow. In setting the new bed, I mark the rows with a light two-horse marker four feet apart and set the plants eighteen inches apart in rows. I have always the best success with a spade.

I cultivate with a harrow tooth cultivator as soon as planted and intend to go through them every week, especially after a rain, until about the first of September, and sometimes later. I generally weed and hoe two or three times during May and June.

I used to grow about twenty-five kinds. From these we selected what we considered the best and now have but sixteen, and some of these have not had a fair trial yet, as the strawberry crop has been very poor the last two years. From these sixteen kinds we have chosen for our main crop Warfield, Senator Dunlap, August Luther, Splendid and Brandywine.

Our raspberries and blackberries are planted in the apple orchard. For red raspberries I mark the rows with a two-horse marker, five feet apart, running north and south, and four feet apart running east and west, and every fifth row we plant in apple trees, twenty feet apart, which makes our apple trees twenty by thirty feet and raspberries four by five feet apart. By planting this way they are but little more trouble than a piece of corn, as they can be cultivated both ways. We try to give them a shallow cultivation every week—same as the strawberries—until the berries begin to ripen, and again after the heavy pickings are over.

I plant currants and gooseberries same as raspberries.

Blackberries and black raspberries should be planted off by themselves, as they can be cultivated only one way. I plant blackberries four by eight feet apart and black raspberries four by seven feet apart and cultivate the same as red raspberries. I grow of the red varieties: Early King, Miller and Loudon; of the black at present we have Cumberland, Conrath and Older; blackberries, Ancient Briton, Snyder and a few Rathbun.

Currants: Stewart's Seedling, Red Cross and Long Bunch Holland.

Gooseberries: Downing.

This, now, brings our subject to the latter part of June, with the strawberries beginning to ripen and ready for market.

We sell a great many of our berries to consumers. We have customers whom we see every day, depending on us for berries. Our best berries have always been of such quality as to command two or three cents per quart above the retail grocery price.

We never have had to solicit very much trade as the berries talk for themselves. When they ripen too fast, we take a load to market in the morning and have another fresh load ready for the retail trade in the afternoon.

Mr. Kellogg (Wis): Mr. Farmer gave us a list of strawberries, and I would like to ask him whether the Dunlap is satisfactory in productiveness.

Mr. Farmer: This year they did well. We have not had much experience with them, but this year they did very well.

Mr. Kellogg: Do you have matted rows?

Mr. Farmer: Yes. The berries were of good size, but they stopped bearing all at once.

SMALL FRUITS IN MAY AND JUNE.

WALTER YAHNKE, WINONA.

May and June are two months when the fruit grower is kept very busy. This is the critical time of the year when everything is waiting to receive its share of the work, and the shares must be pretty evenly divided, for if something is neglected there will be a shortage somewhere, on the table or in the purse, and probably with both. There is nothing that I know of that brings as large returns per acre as strawberries if planted on suitable soil and given proper care and cultivation, provided proper varieties are selected. Any ground that will produce a good crop of corn or potatoes will produce a good crop of strawberries.

Considerable care should be used in setting out a strawberry bed, for if the plants are set too deep the crown will rot or make a feeble growth and if too high the upper roots will be exposed and die. The plants should not be taken from an exhausted bed; they should be in a healthy and thrifty condition. Before planting all the old runners and unnecessary leaves should be removed.

Mr. Yahnke's raspberry field in summer.

When sufficient hands can be employed it is best to have some prepare the plants while others do the planting. Great care should be taken that the fine roots are not exposed to the sun or wind. The best way to protect them, I find, is to dip the roots into mud, put the plants into baskets or boxes and therein taken to the field.

We find a line the best guide to set strawberry plants by, because it leaves the plants level with the ground, and therefore they are not as likely to be washed under during a heavy rain as

they are when set out after a corn marker. The best and probably the fastest way to set out the plants is with a spade. It generally requires a man and a boy for one force. There are various distances to plant strawberries, but it depends on the variety and on the fertility of the soil. All the blossoms should be picked off the first year, as it will give the plants more strength to develop.

As soon as the planting is done the ground should be cultivated with a fine tooth cultivator, and it should be worked twice a week if possible through May and June, thus making the plants grow rapidly and killing the weeds before they get to have strong roots and at the same time pulverizing the ground to conserve the moisture in the soil. Some hoeing is necessary around the plants and should be done as often as a crust forms on the ground or weeds appear to come, and if done in time they will not require much hand work.

Strawberry picking generally begins about the 10th or 15th of June and continues through the month. All the necessary preparations for the harvesting of the crop should be made before this. The boxes and crates should all have been made up and the pickers for the season engaged.

Mr. Yahnke's raspberry field in winter.

Raspberries should be planted before May, but if delayed can still be planted if attended to at once. If you have the plants near for digging you can do the work successfully. They will do best

on a rich, well cultivated soil, preferring a northeastern slope. Nothing but strong, healthy suckers or tip plants should be used, as the success of the planting depends on the first year's growth. The fruiting patch should be cultivated once a week so as to keep a dust mulch. Raspberries need an immense lot of moisture to bring the fruit to the desired size, and where this is lacking the crop will be short if not a failure.

If currant bushes have been mulched, cultivation is necessary only to keep the weeds down. In dry seasons cultivation is better than a mulch. In May and June the currant worms need more attention than the currants, for if they are not tended to we need not look for the currants. The best way to tend to them is to feed them Paris green. The essential point in successfully combating the currant worm is to watch when they make their first appearance, not on the top of the bush but on the inside. Then spray with Paris green, using six ounces to forty gallons of water. The work must be thoroughly done, so that the inside of the bush as well as the outside will get some of the spray. If a rain should set in shortly after, they must be sprayed again. If the second brood should come when the currants are ripe use hellebore instead of Paris green.

Gooseberries are treated practically the same as currants except before the buds open spray with Bordeaux mixture.

Mr. J. V. Bailey: I would like to ask Mr. Yahnke how he handles the second crop of worms.

Mr. Walter Yahnke: Take the white hellebore in powdered form and sprinkle it on.

Mr. J. O. Weld: How do you keep the birds from eating the currants. Out at my place two years ago last summer I did not get any currants because the birds got them all.

The Chairman: What kind of birds were they?

Mr. Weld: All kinds.

Mr. John Nordine: Plant more currants.

Judge Moyer: Plant the Russian mulberry, and they will leave the currants alone.

Mr. C. W. Merritt: On a strip along the road about two hundred feet long I have the red Russian mulberry planted, and the birds will go for the mulberries as long as there are any left.

Mr. J. W. Murray: Plant enough fruit so you will not notice what the birds take away.

Mr. Albert Lano: I rather doubt the gentleman's statement that all birds eat currants; I think there are only a few that do. I would advise him to just shoot off a gun, not shoot at the birds, but the noise of the gun will scare them away.

Mr. Weld: I could not stay there all the time to do that, I have something else to do. I will tell you what I did this year, and it proved a success. I had two rows of currants sixty feet or over in length. I drove some posts in the ground and put some pieces of 2x4 across and covered them over with mosquito netting. I bought ten bolts which cost me \$3.20. I covered them all over, and the birds did not get at them. We had all the currants we wanted and sold enough to pay for the mosquito netting. After I got through with it I rolled it up and put it away, and it will do to use again next year.

Mr. Lano: Can you name any of the birds you found eating currants?

Mr. Weld: I saw robins and sparrows eating the currants.

Mr. Lano: If you will try this experiment I think you will find they will not trouble you so much. Put up posts six or eight feet high, and to those posts hang pieces of bright tin. These tins will blow about and revolve in the sunlight and will frighten the birds away.

Mr. Murray: I introduced that scheme in our region of country. It will work well enough for a year or two until the birds become smart enough to know it won't hurt them, and then they will light right on the posts.

Mr. Benjamin: I think a man ought to stand there with a shot gun to keep the cedar birds out. They work in cloudy weather as well as in any other.

Mr. Lano: The cedar wax-wing will actually eat the blossoms of the apple trees. Two years ago the season was a little earlier than usual with us. We lived in the northern part of the state, and the apple trees, the Duchess, Wealthy and Transcendent crab, were in full bloom when the cedar wax-wing arrived from the south, and they ate up many of the blossoms. I am fond of birds and never kill one unless I wish to use it. For a number of days they were feeding on my apple blossoms before I discovered what they were doing, and I then began to chase them away, but it was too late. In the season of 1905 the apple trees were a little in advance of the arrival of the wax-wings from the south, and I was ready for them. I shot a few of them, and it scared the rest away, and we had lots of apples. When we say sparrows it means the largest family of North American birds, most of them perfectly harmless, except the English sparrow, and he should be killed wherever found just like a rat. He is the rat of the bird family. The robin will leave your orchard if you simply fire off a gun several times, and it will make you less trouble than putting up netting.

THE APPLE ORCHARD IN MAY AND JUNE.

NILS ANDERSON, LAKE CITY.

About the first of May we usually find the weather wet and cold; still, the buds are opening, and I begin to look for the green aphids. They are generally to be found on the early starting varieties, such as the Transcendent, Early Strawberry and Minnesota crabs. If badly infested, the trees had better be sprayed, but if not the orchard is considered safe until after the blossoms fall. At this time we can use the teams for cleaning the orchard from limbs that have been pruned from the trees in March and early April, and haul off and burn other rubbish that has accumulated. The young trees are now cultivated and are leafing out and starting to grow. The bearing orchard that has been plowed must be harrowed and made smooth, as the blossoms of all the early varieties have fallen by this time, and but few blossoms remain on the late bearing trees.

The spraying must now be commenced, or your crop of apples will be reduced. At first, I used the same amount of Paris green on the apple trees as on the plum trees that had been sprayed before, viz: six ounces of Paris green to fifty gallons of water. This mixture was all right for the codling moth but too much for the foliage on the Tetofsky apple trees, which was badly burned. All the other trees showed no signs of being burnt. The orchard that is set in the old way, we spray on one side of each row or on both sides as we go through the orchard, but where the orchard is set in the new way, we spray one side and then come back the other side; and where the top of the trees cannot be reached with a spray, it is changed to a stream, and we spray until the water is dripping from the trees. It is better to waste some Paris green than spend a lot of time that does no good.

The last of May has now arrived, and the weeds are starting, and we find it necessary to again cultivate the young orchard and to harrow the bearing orchard. We aim to work the orchard once every two weeks after this time.

We are now entering the first days of June, ten days after we have sprayed the apple orchard for the first time. About the first of June I spray the orchard the second time. For the second spraying I have been using four ounces of Paris green and about six pounds of slaked lime, mixed with fifty gallons of water. This time I intend to catch all kinds of insects and use lime to prevent the scab. There is one good advantage in using the lime, we can see exactly where we hit. The orchard that is not under

thorough cultivation must be mowed as often as the grass gets of any height, and I leave the grass where it falls, as I believe this is the best way to keep a bearing orchard.

If we have had wet weather up to the middle of June, we can now look for blight. The orchard in cultivation usually gets more moisture than the trees use, and the overflow of sap lodges in the small limbs, where it ferments and at once kills the twigs and leaves. This I always believed to be the cause of blight, as I never could see any other reason for it. I have tried different means to prevent the blight, but have found nothing better than keeping the orchard in grass and mowing frequently. The grass takes up the moisture that would otherwise go to the trees, and the grass when mowed furnishes a good mulch in dry weather and a clean blanket for the apples to fall on. So I believe I will fall back on that plan again and will sow clover instead of grass seed.

Mr. Nils Anderson, Lake City, Minn

Pruning in June I do not practice. I go through the orchard and cut out the dead limbs and all limbs that show signs of dying. I also cut off all water sprouts that may have started, and once in a few years I go through with a knife and rip the bark on the trunks and large limbs. The trees will then grow more stocky, and the bark will not crack in cold weather, as it often does, near the roots of young trees.

We are now in the last days of June, and another spraying should now be done to prevent the last brood of the codling moth. The worm, when hatched, will enter the apple, at any part of it, and remain until the apple falls or is taken from the tree.

THE PLUM AND CHERRY ORCHARD IN MAY AND JUNE.

C. W. MERRITT, WINONA.

We will first take up the plum. But I would turn back into April for the first work, if the weather conditions are favorable, by first trimming out all old wood and then spraying with sulphate of copper solution (sulphate of copper one pound, water twenty-five gallons), this to kill plum rot spores. If there are any mummy plums left on the trees, gather carefully and burn them; they are ready to start the rot on the new plums. Be thorough with the spraying at this time as well as later, as these spores are lodged all over the tree—yes, and on the ground too. The solution should be applied before the buds swell much.

All sprouts that came up around the tree must be dug up and the ground thoroughly cleaned and stirred up. Trees bearing heavy crops should be well fed with stable manure.

Before the buds open begin spraying with Bordeaux mixture and make the tree look white with it; after the blossoms have fallen spray again at intervals of a week until they have had four or five sprayings. This will help check curculio also, as this dressing is not at all to his taste. I have never yet had time or patience to run around and knock him onto a canvas and then kill him.

In June I would go over trees and thin out plums, leaving them two inches apart. It will take time and patience to do this, but in the fall you will have found that it has paid you big with finer plums than you ever had before.

The cherry orchard. I would remove all dead wood, but do not prune live wood if you can help it. The cherry is impatient of the knife. Trim and shape the cherry tree the first two years of its life and then let it alone. It will form its own top. Spray with copper sulphate solution the same as for plums. Then with Bordeaux mixture before the buds open, and after the blossoms have fallen spray the same as for plums. I would not feed cherries as I would plums, they are better with not too much feed. If possible set your cherry orchard on a sidehill, where there is good drainage. They will not do well on heavy, level land; in fact, a coarse, gravelly soil is best for cherries. Give them plenty of light and air, setting your trees at least twenty feet apart each way.

VEGETABLE GARDENING IN MAY AND JUNE.

J. VINCENT BAILEY, NEWPORT.

May and June are very busy months for the gardener in Minnesota, as most of the out-door planting and transplanting is done during these two months, and when the soil becomes warm enough to receive the vegetable seeds, the weeds begin to grow and cultivation is necessary.

I have always found these not only the busiest months but the most important months to the gardener, since the different kinds of vegetables have to be planted at the proper time to secure the best results, and, where earliness is desired, the man who is even a day late, after the proper time for planting, may lose many dollars, for when the early vegetables begin to come to market the price falls very fast after the first day or two.

Then we have the insect pests and the fungous diseases to fight, for as warmth comes into the soil and air these pests are not slow to make their appearance. They must be fought at the right time and with diligence and hard work, or the harvest will be small.

The first day of May often finds us with most of our hardy vegetables, such as radishes, onions, beets and other vegetables which will stand frost, planted and growing, and often the more adventurous gardener will have his sweet corn, melons, cucumbers and other tender plants started in the open, although in this part of Minnesota it is not considered safe to plant these kinds of vegetables till the tenth of May.

Great care must be taken in the preparation of the soil for all garden crops, for much expense in weeding and after cultivation may be saved by thorough preparation of the soil. Where hand-weeded crops, such as onions, are raised, it is always best to prepare the soil the year before by raising a cleaning crop, such as cabbage or other vegetables of like nature, that will, with proper cultivation, clean the land of all weed seeds. If manure is applied, rotted manure should be used, as it is less liable to have weed seeds in it, but where cabbage is used as a cleaning crop it may be manured heavily, thus making the soil rich enough for the after crops.

To go into details of the planting and caring of the different kinds of vegetables, or the ways and means of fighting the weeds and insects or fungous pests would take too much time—but I should be pleased to answer any questions so far as I am acquainted with the subject.

Mr. Nils Anderson: Have you had any experience with wire worms and what is your remedy?

Mr. Bailey: I have had a good deal of experience with them, especially on muskmelons. It is a very hard thing to fight. The main thing is to get as vigorous a growth as possible in the start, and if one starts his plants in the hotbed it means a great deal, because hotbed melons are more subject to it than melons grown in the field. I have had some correspondence with people who claimed they prevented injury by spraying, but I can't give the formula just now. It is a Bordeaux mixture spray or something nearly like it.

The Chairman: Give us your experience in fighting cabbage worms last summer. It is rather interesting and unusual.

Mr. Bailey: I had quite an experience. We raised about seventeen acres of Holland cabbage. The first trouble was with the common brand of cabbage worm. They were easily handled with Paris green. • But right after them came the measuring cabbage worm, and it just seemed as though they were going to take everything. I found as high as fifty and sixty on one plant. We then began to spray, using Paris green. We worked with small machines and we used dust, but we could not get at the worm very well because they all seemed to work under the leaf and thus avoid the Paris green; they seemed to work on the parts that were not sprayed. Then we used the horse sprayer and went through with the common nozzles we happened to have, but they were too coarse; so we used the fine nozzles, and we got nearly done spraying when we noticed the worms were dying, and in three or four days they were all gone. This was not the effect of spraying, but it was a disease that killed them all off.

Mr. Merritt: Are you troubled with the white maggot around the root of the cauliflower?

Mr. Bailey: All we raise is cabbage, Holland cabbage, and the maggots do not seem to trouble that.

Mr. Tanner: How late can you spray Paris green on cabbage so it will be safe?

Mr. Bailey: Using it lightly and having it evenly distributed over each plant, I use it right up to within a few weeks of cutting. I don't think there is any harm in it.

The Chairman: I thing it was Prof. Gillette only a few years ago said it was not dangerous to use it even up to the time of cutting. He experimented with it in dust form, and then he found that in order to get a dose of Paris green it would be necessary to eat thirty cabbages, outside leaves and all, and there is really no probability of any one being injured by Paris green in that form.

Prof. Washburn: It is usually a prejudice in the minds of the people. That is the only objection to the use of Paris green.

Mr. Gust Johnson: What is the percentage of strength used?

Prof. Washburn: About the same as is used for other purposes, about one pound to 160 gallons of water and put some soap in.

Mr. Bailey: We used Paris green this year as long as we ever used it, and our cabbage was fine and large. As soon as we got

through cutting we turned in a flock of sheep, and the sheep were not affected at all.

Mr. Murray: What strength did you use it?

Mr. Bailey: For the last spraying I used one pound to fifty gallons of water.

Capt. A. H. Reed: Where do you market your cabbage?

Mr. Bailey: This year there was no trouble in marketing them, the prices were good and there was a general demand. I usually market them in St. Louis, but this year we shipped north, and we are holding about thirty tons for February sale.

Mr. Kellogg: What do you do for the black squash bug?

Mr. Bailey: We never had much trouble with them. We usually scatter them over with lime.

Mr. McLeran: Do you find it makes any difference in the keeping qualities of cabbage whether it is transplanted later or a few weeks earlier?

Mr. Bailey: They do seem to keep a little better planted later, although they do not seem to head up hard enough, so I must plant them early enough so they get a hard head.

The Chairman: Don't the soft headed keep the better?

Mr. Bailey: I don't think so.

The Chairman: I do. I used to work for Mr. Gregory, and he used to winter over a lot of cabbage for seed stock, and we could winter the soft heads better than the hard ones. When we opened the pits in the spring we found the hard heads would burst open while the soft ones would come out whole and be in a very fine condition.

Mr. Bailey: Would that be the case if they were kept in an open cellar?

The Chairman: That would be different; in the ordinary cellar it would be different.

Mr. Elliot: Is not that the reason why the seed we get from the growers produces nothing but soft heads?

The Chairman: Sure, there is no question about it.

Mr. Gibbs: In regard to killing cabbage worms, when I spray for cabbage worms I use one barrel of water and three pounds of Paris green.

Mr. Lano: Speaking about cabbage worms, when the cabbage is large enough I take a pinch of bran and put it in the top of each head, and it will kill the worms almost every time. I have tried that every year.

Mr. Nils Anderson: I use common flour.

Mr. W. J. Tingley: We use air slaked lime.

Prof. Huston: Speaking about prejudice against the use of Paris green, probably the most sensible thing you can use is the yellow arsenite of soda. You can use less of it because it is perfectly soluble in water, and it can be made to stick admirably. A single dip in water of the cabbage or whatever you spray will remove the arsenic. It is much more easily applied than Paris green. It has been used with great success in various places where Paris green failed.

THE VINEYARD IN MAY AND JUNE.

A. A. BOST, EXCELSIOR.

It will be impossible in the time allotted to go into details on many points. This is not only the most important time in the care of the vineyard but covers a period when most of the work of the season is done. It takes the vine from the dormant state to within six weeks of our first ripe grapes. I am asked to consider briefly each step, beginning with setting out the vines.

Having selected your most favorable location, a southern or eastern slope, (elevation you *must* have), and secured your vines—usually two years old—plow your ground deep with a common cross-plow, followed by a subsoil plow, and harrow well, as for any crop. Mark off your ground by using small stakes, three or four feet long, and set them eight feet apart each way, making calculations to have a narrow alley crosswise of the rows every two hundred feet. This is for convenience in carrying out fruit, etc.

These stakes will answer in place of a trellis for the first year or two, after which you will put in your trellis. Having your stakes set you will have holes dug on a slant so that your young vines may be set slanting toward the post, and about a foot away from it. Before planting trim the vines back to two or three buds and prune roots back at least to eight to ten inches in length, being careful to cut off closely all surface roots. This pruning of surface roots should be done at least every two years thereafter—but we will come to this later. These newly set vines will need little attention during May and June except to tie the growing canes in the proper direction. It will be understood that our vines are to be trained to the east or north and all in the same direction. When they attain full length—about the second or third year—they will reach so as to overlap each other a foot or more.

Very little more need be done the second year except to select the most promising shoot and pinch off all others so as to encourage a heavy growth in the cane selected for our permanent vine.

We will now consider our young vineyard established and ready to start out on its third year's growth. The same directions will apply to vines of all ages. Put up your trellis, consisting of posts set every twelve feet in the rows, bracing all end posts, and putting on three or four wires, fourteen inches apart, beginning with the lower wire, which should be eighteen inches from the ground.

No exact date can be given for uncovering the vines in the spring. The later we can keep them back, the safer they are from

late frosts. The only safe way is to keep close watch by digging out a vine every day or two and get them out as soon as the buds begin to swell. We often hear the assertion that we can not retard the growth by mulching, etc. However this may be with regard to a tree whose top is exposed, a single season's observation will convince any one that the most exposed spurs and canes are the first to start. About May 1st, however, we will find our vines ready to take out, which is best done with a potato fork or hook.

Mr. A. A. Bost, *Excelsior*.

Dig away until you can reach the end of the vine with the hands, when the vine can ordinarily be pulled out without injury. If the ground is too solid, loosen up a little with the fork. Throw the vine up and allow it to drop on the ground so as to clean off the dirt as well as possible.

Having the vines all out of the ground and trellis all in order, tie vines to lower wire, laying the vine on top of the wire. This should be done at once, before buds start, as we must spray while vines are dormant and before mildew has a chance to get started. Remember that this spraying is a *prevention*, not a *remedy*. After mildew is started little can be done.

Spraying should be done about every two weeks, using Bordeaux mixture for most all diseases of the vine. It is well to watch closely for any appearance of mildew, black rot, etc., on fruit. This may be treated with a dust spray of flower of sulphur. Several kinds of spray pumps are used with success. A barrel mounted on wheels or dragged on a stoneboat is preferred by some. But the knapsack seems the most practicable in the vineyard. The main thing is a pump that keeps the mixture well stirred up and that gives a high pressure constantly, as we must have a fine spray reaching every part. This forms a coating that once dried on is hard to wash off.

As soon as the vines begin to throw out new shoots our trimming begins. Prompt attention to this saves time in future work and makes it possible to keep the vine in shape. Save only the necessary growth, rubbing off all except one shoot every eight or ten inches apart if we want the best fruit. Select sprouts nearest the old vine. I might speak a word of caution in trimming the Delaware too closely, as it is apt to induce such a heavy growth in the size of the fruit that the berry sometimes bursts its skin. If we find later that we have too much fruit set, it can be thinned just as any fruit crop should be thinned.

Tie each shoot to the next wire above as soon as it reaches high enough. This brittle growth is apt to be broken if neglected. As soon as these shoots reach the desired length, a foot or two above the upper wire, they must be pinched off. All laterals are also to be pinched off, leaving only one leaf thereon, as soon as it can be done. This may seem severe trimming, but some very successful vineyards in my observations, including the many acres owned and managed by Mr. Latham, that acquired such a favorable reputation in our markets for quality of fruit, were trimmed as I have endeavored to describe.

Nothing has been said in regard to cultivation, which is an important matter. As soon as the vines are tied to the lower wire the ground should be plowed away from the vines, using a one-horse plow. Dig away all dirt that has been used in covering, at once, cutting away, close to the vine, any surface roots that may appear. There are many reasons for doing this. It keeps our vine in shape to lay closer to the ground for winter covering. It does away with the danger of winter-killing of surface roots. It induces the growth of lower roots and makes it possible to give the ground proper cultivation, which is usually done with an ordinary cultivator. I find, however, that a section of an iron harrow heavily weighted, sloping the teeth well backward, is an excellent pulverizer.

Ground plowed twice each season this way is very easily kept cultivated, and very little need be done in the way of hoeing by hand except to level the ground after plowing away in the spring. If the above directions are carefully followed, July 1st will find your vineyard with a promising crop of grapes and very little more to do until you have ripe fruit to repay you for your trouble.

Mr. Geo. J. Kellogg (Wis.): What formula do you use with a knapsack sprayer that will not clog the nozzle?

Mr. Bost: I have lots of trouble, and I wish some one would invent a nozzle that would not clog.

Mr. Kellogg: I wish so too.

SPRAYING FOR FUNGOUS DISEASES AND LEAF-EATING INSECTS.

F. L. WASHBURN, STATE ENTOMOLOGIST, ST. ANTHONY PARK.

The writer wishes to again urge upon horticulturists and nurserymen the importance of spraying, and spraying in time and intelligently, to combat insect and fungous attacks on fruit trees and

Spraying strawberry plants with liquid Bordeaux

nursery rows. These evils grow yearly in proportion as the acreage in fruit trees and nurseries grows. Lime and sulphur spray for early spring (too late now) and Bordeaux mixture for late spring and summer are the standard solutions to work with, and the formula for each has been given before in the pages of this magazine.

This is not the time to discuss the comparative merits of dust and liquid spraying, that will come later. In the opinion of the writer it is wiser for the fruit grower to stand by the method he is most conversant with at this date and defer work with a new method until the latter has been tested here. In other words, we believe, though we are ready at any time to be convinced we are wrong, that liquid spraying is the best unless one has lack of water or hilly ground or both. On the other hand, in large orchards, the dust spray is more rapid and, perhaps, more thorough than the liquid spray. It is better when possible to make one's own dry Bordeaux than to buy that sold in the market.

Adding one pound of Paris green to every 100 gallons of the liquid Bordeaux or to every fifty pounds of the dust, will keep all leaf-eating insects in check.

The formula for Bordeaux mixture, and the time to apply it is given in the February number of this magazine, on page 72, and need not be repeated here.

It is well to test the Bordeaux when first made, to make sure that there is not too much copper:

Test A: Hold a clean, bright knife blade in the solution for one minute; if it becomes coated with copper add more lime.

Dust spraying with Bordeaux in a large nursery.

Or, test B: Pour some of the Bordeaux into a white dish and gently blow across the surface; if there is enough lime a thin pellicle will form on the surface.

Or, test C: Buy five cents' worth of ferrocyanide of potassium crystals 98% (poison) and dissolve it in ten times its bulk of water.

Keep in corked bottle, and it will last the entire season. Pour some of the Bordeaux into a white dish, and add to it a few drops of the cyanide solution; if any discoloration appears, more lime should be added.

The writer wishes to state that this article is the result of his innocently calling up the secretary over the 'phone, and urging him to do all he could to encourage horticulturists to spray. The answer came back over the wire, "Now, Professor, you write up an article and send it in for the May number!" We have done this, but disclaim all responsibility if it appears too much like a repetition of last winter's talk. Blame the secretary—that is what secretaries are for.

WISCONSIN STATE HORTICULTURAL SOCIETY, ANNUAL MEETING, 1906.

A. BRACKETT, EXCELSIOR, DELEGATE.

The Wisconsin State Horticultural meeting opened on the morning of February 6th, in the assembly chamber of the capitol building. The delegates from other states were Geo. Rowe, of Michigan; Prof. S. A. Beach, of Iowa; Arthur Bryant, of Illinois, and A. Brackett, of Minnesota.

We were entertained at the Avenue Hotel in the most sumptuous manner and were made honorary members of the society.

They had a very good display of apples, there being about two hundred and fifty plates. Most of the varieties were not what we call our "iron clads." They were more of the Iowa line of apples, such as Tolman Sweet, Winesap, Ben Davis and Jonathan, with quite a showing of Northwestern Greening and Wealthy.

The reports of the experiment stations as regards apples, were not very satisfactory, most of the reports showing the apples to be very scabby and badly winter-killed. The Duchess of Oldenburg and the Northwestern Greening and Patten's Greening stood the winter and were free from scab. Apples were very badly killed during the winter of 1895-6.

The paid up membership is three hundred and seventy.

We had morning, afternoon and evening meetings, which were largely attended, more especially the evening meetings.

We had a long and very interesting paper on "Pedigreed Strawberries," by Mr. Crawford, of Ohio, on which they had quite a heated discussion, but the unanimous verdict was that no plant should be pedigreed unless it was propagated from the seed of

two known parents, and that the majority of so called "pedigreed" plants, sold by very many tree agents within the United States, was not a legitimate deal.

"Apple Blight and Apple Canker," by Prof. H. H. Wetzel, Cornell University, N. Y., was a very interesting paper, and the professor was enthusiastic and very confident that he had a sure preventative of the fire blight, which idea was not shared by the older members who had had personal experience with it.

Prof. Beach, of the Iowa Agricultural Experiment Station, presented a paper on "The Spraying of Apples and Potatoes" that was one of the best, in my opinion, that I have ever listened to. His plan of making Bordeaux mixture was to dissolve the copper sulphate in a small amount of water and the lime was to be slaked in a small amount of water. These could be kept any length of time and mixed in a sufficient amount any time that it is wished to use it. He uses four pounds of copper sulphate and four pounds of lime, which is sufficient for fifty gallons of water. He prefers arsenic one pound, sal soda four pounds, dissolved in two gallons of water, to Paris Green, as it will mix better and not settle, and he thinks it much better for spraying potatoes. In spraying potatoes he uses six pounds of this mixture to fifty gallons of water and only four pounds for spraying trees.

Mr. A. L. Hatch had an article headed "Faith, Hope and Cherries," and in the discussion that followed most of the people got more faith and hope than they did cherries. The cherry growers of Wisconsin are in about the same box that the Minnesota growers are, very few cherries for the amount of money and labor expended.

Some of the members of the society tried hard to pass resolutions to appoint a committee to wait on the Wisconsin representatives to try and make a law which would prevent tree peddlers from gulling the people, but the general opinion was that it would not be practicable, and the best way to handle them was to educate the people that it would be to their advantage to buy their trees from persons who have known reputations for selling nursery stock true to name, and if they do not take such warning the only way was to leave them to the mercy of the tree peddler.

The meeting ended with a banquet, which was largely attended and was a success in every particular. We do not think that we ever attended a meeting where the members were more genial and pleasant than those we met at this meeting.

CAN PEACHES BE GROWN IN MINNESOTA WITH PROFIT?

A. D. LEACH, EXCELSIOR.

Commercially, I think not; for home use, yes!

I have no commercial peach orchard, neither have I any intention of setting one. If any one else thinks of setting such an orchard, my advice would be, don't do it in this cold climate; go farther south, or I fear you will be disappointed later on.

Bokhara peach tree growing in A. D. Leach's garden.
From photo taken in August, 1903, when bearing two and one-half bushels of fruit.

My little experience in growing peaches in Minnesota has convinced me that there is too much risk of losing the trees by injury to the roots in laying them down, or of their winter-killing after they are down, to take the chances of growing them here in large quantities as a business venture. There are so many little details that must be attended to, or a failure is sure to follow. The mice and rabbits must be looked after, or they will destroy them. It will take from one to two hours for one man to lay down and cover a six year old tree in good shape to go safely through a Minnesota winter. Therefore I advise you, if you intend to grow peaches as a money making business to look for a warmer climate for your venture.

Money making is not all that pays in life. If it was, God pity us!

Will it pay to have one or more peach trees in some sheltered place near our home, where the tree will be an ornament and from which we may gather delicious fruit for our table, for canning and for eating from the hand? I say it pays me. It will pay you.

Peaches grown in this climate and fully ripened on the tree are finer in flavor than any you can buy on the market, and the thought that they grew on your grounds makes them doubly sweet to the taste and pleasant to the eye.

The beautiful blossoms, in the early spring, the lovely foliage through the summer and, last but not least, the luscious fruit in the fall—who dare say that all this does not pay for the few hours' work?

If you can and will take in all this beauty, from the opening of the buds in spring until the fruit is fully ripe, and then moisten your lips with the juice of a peach, fully ripened on the tree, you will feel amply paid for all of your labor with interest.

We cultivate flowers in our gardens, and we know it pays, because they cheer and brighten our lives, and they furnish beautiful decorations for our tables and homes. So with the peach—and it is more attractive because not common in this climate. Many people came to my place the past summer just to see the peach trees with their fruit. Many of them said they had never seen a peach tree before. I enjoyed these calls and chats, and it paid me, for it made life sweeter and home dearer.

Yes, I am sure it will pay any one who has a place for them to plant two or more peach trees if they will give them the necessary care and at the proper time. If you can't or won't care for them, then don't plant any peach trees in Minnesota. It won't pay you.

I have a seedling peach of my own growing that I think is very fine. The seed was from the Bokhara No. 25. It is a perfect freestone, of large size and fine flavor. I sent two specimens by Mr. Louis to the Genesee Valley in York State this fall, and he said they told him they had nothing better. I think it is much hardier than most peach trees, but it must be covered. It ought to be propagated by some one, and I will furnish buds or scions from it to any one in this society who would like to propagate it.

Two and a half bushels is the most peaches I have had from one tree in one year. I have had plenty for our own use for six years past.

STRAWBERRIES IN THE PINE REGIONS OF MINNESOTA.

H. G. WESTMAN, SANDSTONE.

My location, sixty-five miles southwest of Duluth, at Sandstone, lies between the St. Paul & Duluth and the Great Northern railroads. The location is a good one for shipping.

Thirteen strawberries in twenty-four inches. Grown by Mrs. John Best and Mr. C. W. Bills.
Photo by P. A. Christianson, Hinckley

The berry crop was poor this season, caused partly by extreme cold and wet weather while in bloom. Later on they blighted badly. I gave my berries good cultivation last season, but the white grub got into them and almost destroyed my best bed. I did not get them mulched until March, and all the plants on sandy ground

killed out, but plants on heavy land and where I had not kept them very clean came out all right. I cultivate on the matted row system, as I find they will stand the frost better when plants are allowed to grow close. I did not spray as I should have done, but I was not home at the proper time to do it.

We began picking berries the first day of July and continued for about twenty days. The season was short this year. My plants were scattered over one and a half acres, and from this land I harvested 1,200 quarts of very fine berries.

One remark that will probably interest some is that I have a bed of berries that I have cropped five seasons and the fruit is yet well up to the standard size. I sold the first six hundred quarts for \$2.00 a case of sixteen quarts, and the rest for \$1.60 a case. Sold all berries in my home market.

Mrs. Jennie Stager: I would like to know something about the blight of strawberries. In our section there were acres of strawberries that were entirely blighted after the berries were large enough to ripen. One day they would be in good condition, and the next they would look as though fire had passed over the berries; the leaves were black just as though they had been frozen. We lost most of our berries in that section through blight, or whatever it was. I would like to know something about it, so I could tell the people what to do in case such a thing should occur again.

Mr. Wyman Elliot: Can you give the date of that blight when it occurred?

Mrs. Stager: I do not exactly know the date, but it was near the first of July, because I had ordered a lot from a young German, and as he did not bring the berries I went up there after a few days to see what was the matter. They showed me the vines with berries on them all dead, and they were large enough to pick. The whole field looked just as though they had been frozen, the leaves and all were black.

Mr. A. Brackett: They had been frozen, the roots had been frozen because they were without proper protection or something of that sort.

Mrs. Stager: They were covered.

Mr. Brackett: If you had dug up those plants you would have found the roots had been injured by the winter, and after the fruit commenced to mature it weakened the plant. The strawberry plant is susceptible to blight, and where the plant is injured it is subject to blight, and it was a case of strawberry freezing all over the country. The crop was good, and when they commenced to ripen a few would be all right, and the rest were killed.

Mrs. Stager: At this one place I went they had put on straw as soon as it froze, they had put on just enough to cover the bed, and later they covered the bed over with six to eight inches of straw.

They were all covered pretty heavily, and I have never heard of such a thing as strawberries freezing when they had the proper protection.

Mr. J. M. Underwood: Mr. Brackett is partly correct, but he does not get down to the bottom of it. The winter perhaps was a contributing cause, but the fundamental trouble was the lack of moisture. It is drouth, in other words. The covering will not do any good if the roots and the ground are dry. I have had large experience in that and lost valuable strawberry plants, and I am satisfied it was entirely due to lack of moisture in late fall and winter. Of course the roots are injured, and the reason they are injured is because they are dry. I cannot positively say from actual experience, but I believe if the plants had been irrigated and the beds filled with moisture it would have prevented the killing. I believe if they had plenty of moisture and then the plants had been properly covered there would have been no root-killing, and that root-killing, or whatever you may please to call it, was the cause of the plants dying and was the reason why the fruit did not develop when the plants came into bearing. I lost five acres of strawberries in a similar way. It was as fine a five acre piece of strawberries as ever I saw. It was the first year of fruiting, and they came into bearing so that they developed berries from one-eighth to one-fourth of an inch in diameter, and the blossoms in the bed were so profuse that I have never seen anything like it, but they commenced to dwindle away, and our crop was an entire failure. I think it was entirely due to a lack of moisture in the ground.

Mr. Elliot: I can cite an analagous case. Frequently our apple trees bloom very profusely after a hard winter. It is the last effort of nature to produce fruit, and it is the same with the strawberry as it is with the apple.

The Chairman: Mr. Westman says where the vines were rather neglected he had no winter-killing.

Mr. Elliot: The reason was that he had a mulch there that retained the moisture. That is the way I look at that matter, and I think some of you may have found that out by your own experience. If you will look back you will recollect that we had a very dry time last fall (1905) just before the winter set in, and the strawberry growers may anticipate a good crop next year because the ground is filled with moisture, which will insure a good production.

Prof. N. E. Hansen (S. D.): I have a little bit of experience to offer along this line. It is not my own experience, but it occurred only twenty-six miles southwest of where I am located. It was on the place of Henry Hess, at Flandreau, S. D. He raised five acres of strawberries, and he had excellent success follow the use of a gasoline engine. He is so situated he can pump the water from a creek at a very slight expense, and he has always had good success with his berries. He gives them a good soaking in the fall before winter sets in, and that means success every time. That is about all there is to growing strawberries, that and

winter covering. Fifty years ago a prominent apple grower said: "The first requisite to growing apples is water, the second water, and the third still more water."

Mr. C. W. Merritt: I think some of the people are "off" a little. In our section the strawberries are on heavy soil, and we have plenty of moisture in the soil. I think it was a sort of typhoon, or hot wind, such as passed over Nebraska and Kansas and cut off the crops, that cut short our strawberry crop. It was the same all over the country, regardless of the condition of the soil or the amount of moisture. When the berries were nearly ripe they were struck by something, and in a day's time they were gone. It was something in the nature of a hot wind that cut the plants short at that time. I think the time was about the last of June.

Mr. C. S. Harrison (Neb.): It is well known you cannot raise strawberries in a dry country. In Franklin county we never could raise strawberries on account of the dry soil.

Mr. H. G. Westman: In my experience the berries would come along nicely for about two weeks, and then a kind of disease would develop near the hull and crown at the same time, and the plant would begin to blight. Near the crown there was a little crimson spot, and after that appears they will begin to dry up. I would like to know whether anybody has observed anything of a similar nature.

The Chairman: Were your plants considerably spotted with a small reddish spot?

Mr. Westman: They were. We noticed it develop, but we did not spray.

The Chairman: Your chief trouble from that injury probably was because you did not spray. Were you troubled with those little nubbins on the late strawberries?

Mr. Westman: Not at all. Mr. Cashman made the remark that the plants were infected with blight. In our country the beetle destroyed all perfect bearing plants and did not affect others.

Mr. F. B. McLeran: In the northern part of the state the soil was very wet at the time the plants blossomed, and it had a great deal to do with our failure to get fruit. We had an excessive amount of rain at that time.

Mr. A. Brackett: It might affect the perfect fruit. It takes a great deal of water to drown a strawberry, and nine-tenths of the damage is caused by root-killing. The root is not entirely killed, but it is injured to such an extent that the plant has not sufficient strength to develop and ripen the fruit. Last year everybody had plenty of water, but everybody knows the roots were injured by the winter. They were not killed but badly injured, but these are cases where roots of strawberries were not injured. They will have the blight if they are not sprayed, and you can tell in the fall. If strawberry plants have no spots on their leaves, it is hardly necessary to spray next year, although spraying will do them no harm, but if the leaves are spotted it is necessary to spray and to spray thoroughly.

Mr. W. L. Taylor: Where it is not the practice to water strawberry plants a great deal of moisture may be conserved by thorough cultivation. My strawberries have been injured where no cultivation was given after excessive rains and the weather turned hot with bright sunshine. The patch would probably need cultivating right away, and if I did not do it so much moisture escaped that the ground became parched, but those pieces I cultivated all the time did not take any harm at all.

Mr. Dewain Cook: I have had quite a little experience with this strawberry blight, and I believe Mr. Brackett has stated the case correctly as I see it. Two years ago we had quite a lot of berries. We had one patch of several varieties that promised the largest crop I ever grew, and I picked from the Glen Mary, Bederwood and others about two pints of good berries. The season had been wet during the previous autumn, and we did not cover this patch. The next season after we gathered two pickings rainy and hot weather came on, and I noticed that blight and rust appeared, and I believe the root was partially killed, and the blight finished them because of the enormous crop.

Mr. Underwood: What killed the root?

Mr. Cook: It was winter-killed. I have been hearing Mr. Underwood talking about drouth for a good many years; it was drouth first, last and all the time.

Mr. Underwood: If we are going to get any good out of this discussion we want to get at the real facts, at the root of the matter, and not deal with theories. It does not make any difference to me whether it is one thing or another; what it is, that is the thing we want to get at. Winter-killing, it seems to me, is a stock term, and I would like to hear it explained. What is winter-killing? That is the question. Is it caused by the cold weather, by the sun or moon, or what is it caused by? I would like to know what is meant by winter-killing. What I understand by winter-killing is nothing more or less than drouth, simply a withdrawal or expulsion of moisture from the soil and root. What is drouth? It is a lack of moisture. If that is correct I do not care whether it is in the summer or in the fall, whether it is from the effects of the sun or what it is, or whether it is in winter, you get the same condition if it is drouth. And how can we overcome it? We can overcome it by moisture. It must be done by furnishing moisture. If this is correct we have the right kind of a premise to start with, and we can work out something to its logical conclusion; but to simply say it is winter-killing, that does not mean anything, unless you go south or go out of Minnesota where they do not have such cold winters. I do not think it necessary to go out of Minnesota; we must find the condition that prevents us from growing fruit here, and if it is winter-killing we must overcome it. I want to know whether I am correct when I say that last year in the fore part of the fall there was plenty of moisture, but in the latter part of the fall, and just before it froze up, there was a period of dry weather so the roots went into winter quarters in a drouthy condition, and

I trembled for fear our strawberry beds would be injured by it. That is my memory, and we have all kinds and conditions where I live so far as soils and the condition of the climate are concerned. I want you to tell me what you mean by winter-killing if not drouth?

Mr. Geo. J. Kellogg (Wis.): Were your beds well protected and covered?

Mr. Underwood: Yes, they were.

The Chairman: Professor Hansen says he takes that up in his paper on breeding hardy plants.

Prof. Hansen: I want to hear that discussion first. (Laughter.)

The Chairman: It seems to me that would be the way to get at it, to get Prof. Hansen to speak to us on "breeding hardy strawberries and raspberries" among others. He has had a large experience and wonderful success. (Applause.) (See index later for article by Prof. N. E. Hansen, under above title.)

THE MAN WHO SELLS THE NURSERY STOCK—FROM HIS OWN STANDPOINT.

C. E. SNYDER, PRESTON.

In the Northwest nine-tenths of the nursery stock retailed is sold by the traveling salesman, or "tree agent." Two-thirds of the trees now growing would not have been planted if it had not been for this man, his pluck, his energy and his persistence in getting orders. Nurserymen must have him to get their trees sold through the country, and if he has the right make-up in him he gets along pretty well with the people. Some large orchard sales, not actually made by him, are brought about through his influence, arguments and trees he has growing in the vicinity. Hence, the credit belongs to him. They say he is "glib tongued," "sauve mannered," "well dressed, etc." Certainly he is, and he better stay at home if he isn't. It requires all of this. Nurserymen want a glib tongued fellow, and the glibber he is, the harder they want him. To be this it is not necessary to be a liar, rogue or scoundrel. It takes a good talker to describe fruit as well as it *grows* under good cultivation. The agent must believe what he says himself, or the other fellow won't believe him, and have tongue and sense enough to tell what he knows. I have met hundreds of tree agents and in most cases they were gentlemen, upright, conscientious and honest. There are a few exceptions, but the same class of men are bit by the "tree sharks" that go up against the shell game at a county fair—they are trying to get something for nothing and consequently deserve little sympathy.

The worst enemy the tree agent has is the man who does not take care of his trees—a would-be-wise horticulturist who never forgets to slur, insult and cast reflections on him; and there is the

jobber or nurseryman also who fills the orders with trees unsuited to climate or untrue to label. The tree agent is blamed for all this. The delivery agent has to watch that some farmer don't take his trees ten or twenty miles in wind and sun without covering. Then if the man plants them twenty feet apart and lets them grow up in grass and weeds, or mice and rabbits destroy them, "agent's to blame," and "trees no good." Why, you could not grow a willow that way! Those wise horticulturists call him "tree tramp," think he knows nothing about trees, and the fact is the agent traveling around through the country from place to place sees trees under different conditions, different soils, different care, and being a man of good common sense and a keen observer knows more about what varieties grow well under these conditions than this wise horticulturist who does not visit so many places—and the ones he does visit are those under the best care. Why treat the tree agent thus? I could never understand how or why nurserymen could sit in meetings and hear these men berated by some sour individual without raising a protesting voice, men they must have and coax to get. A healthy respect from horticulturists and nurserymen would create respect and lessen prejudice from the mass of people who buy and want trees—and every owner of ground wants trees if he thinks he can get good ones.

The person that takes up nursery canvassing thinking it an easy job or "soft snap" better stay at home. He will find and have to overcome the man that don't care; the man that is going to plant, oh yes, but hasn't just made up his mind yet; the man that has hard stories to tell about the other fellow fleecing him; the man that knows they won't grow, because he tried it three times—the first time he planted fifty trees and not one leafed out, the next time a hail storm killed them, the next time they all started nicely, and the sheep ate them—so he knows "trees won't grow, young man." The beginner will stay in the country during the week, must be sociable, entertain the whole family all the evening and the man for a couple of hours longer, probably until twelve or one o'clock, then to bed. It is only one night with the farmer, so at half past four o'clock he is up, and at five breakfast is ready. "Get that tree feller up!" The agent is glad when Saturday night comes.

It requires a man of more than ordinary push and energy to be an order getter. A man that can sell trees can sell anything. An agent remarked to me at the end of one of his week's work that he had "farmed, raised stock, auctioneered sales and handled machinery, but never was so tired as now." Of course, an agent must be clever and artful as well as subtle and discreet, presenting the good points, well posted on nursery work and proper orcharding, varieties

to plant and places to plant on; artistic, to be able to picture out the beauty, comfort and delight of a well arranged orchard, yard or garden; gentlemanly, well mannered, sympathetic and pleasing. This is the agent that stays at it and gets good usage from his patrons, and generally has the pleasure and satisfaction of seeing the good fruit of his labor and commands the respect of the people. Farmers pay more attention to the agent than to the nursery he sells for, so he gets the credit or blame as the trees are good or bad.

An agent must have the knack of making a man feel better after he gets there than he is when he goes there. A gloomy agent, or one decrepit or sickly is not successful. Few people buy trees through sympathy. That is the reason why so many robust and substantial men are in the business. Good perception, energy and earnestness are dominant traits in the good tree man. Honesty of purpose and method are essential. Honesty inspires confidence, and people feel it. No man can use deception, subterfuge or intrigue and be a successful order getter. People feel that, too. Good tree men are not brazen or full of gall, as sometimes pictured, but sensitive to a degree, and it takes a good actor to hide his real feelings at times. There are many disappointments, and he must never lose his temper. A good and successful tree agent has most of the qualifications mentioned, and the poor ones soon quit or run down the price of trees so they are not wanted. A good, fair price must be had for nursery stock, and if the agent creates the proper desire he won't be jewed. It costs money to canvass a country and distribute the stock, and people won't send to large nurseries for their trees no more than they will send to large jobbing houses for their goods. So after all, if we have fruit we must have the tree agent.

ANTS LIVE ON LICE.—In their migrations from plant to plant the lice are often aided by their foster-mothers, the ants, for many species are carefully cared for and guarded by the ever diligent ants. A peculiar sweetish liquid, called "honey dew," is secreted by the aphides, of which the ants are extremely fond. To secure this they herd the aphides, much as if they were little green cattle. Frequently an ant may be seen tapping an aphid with her antennæ, upon which a drop of the honey dew is exuded and quickly lapped up. Thus, the ants are probably entirely responsible for carrying the young aphides which affect the strawberry roots in Delaware, Maryland, New Jersey and elsewhere, from the foliage down to the roots, and for carrying them from plant to plant as the plants wither from their injury. The melon louse is similarly carried by the ants from hill to hill. But most remarkable of all is the case of the corn-root aphid, which lays its eggs in ants' nests in the fall, where they are carefully guarded all winter, and in the spring the young aphides are carried by the ants to the roots of their favorite food plants. —E. D. Sanderson in April Garden Magazine.

**BLIGHT IN THE APPLE ORCHARD, AND HOW TO
REDUCE IT TO A MINIMUM.**

DEWAIN COOK, JEFFERS.

We are told by professional men that blight is caused by a germ so small that one-half million of them can exist in one drop of water; they also tell us that the only effective remedy for blight is to cut out all of the diseased wood; nevertheless, I believe that by sanitary orchard management blight may be materially reduced.

The blight disease has points in common with some of the diseases of the human family, yellow fever, for instance, in that it requires food, heat and moisture for its existence and is also dependent upon certain insects for its spread.

Mr. Dewain Cook, Wiudom, Minn.

Prof. M. B. Waite, of the U. S. Department of Agriculture, says (see Mo. Hort. report of 1902, page 400), that bees do carry blight extensively and, with other insects, are the principal or almost the only agency of distribution of the germs. He also further states that owing to the sticky substance of the germ it cannot be carried by the wind.

Dr. T. J. Burrill, of the University of Illinois, says (see Ill. Hort. report 1901, page 443), referring to the blight, that it is

very improbable from what is known of its organism that it is ever carried by the wind.

Blight is native to the United States and hibernates during winter in diseased portions of apple wood, usually at the base of some of the blighted branches. During warm days in spring this blight may be seen oozing out of diseased apple wood, forming a thin, sticky substance that is fed upon by insects and by them is carried to the bloom of our apple trees, where it increases in the nectar of the blossom with wonderful rapidity. From there it is carried by the busy little bee and other insects to healthy blossoms, which in turn become diseased. This is how we get that form known as "blossom blight." Later in the season we get another form of this same disease—we sometimes call it "fire blight."

It makes no difference what slope the orchard is upon, if at this time the blight is very bad it is almost certain that the trees are making a too rapid growth; there may have been too much manure and cultivation, a succession of rainy and hot days, and probably general hothouse conditions prevail in the orchard.

Here again is where the insect gets in its work. Much of the blight-poisoned sap oozes from diseased wood, and some of it may be carried on the feet of insects to healthy wood. The germs rapidly find entrance through the expanding bark of the new and succulent growth and are carried downward by the circulation of the sap, which emits a poisonous substance that destroys the tissues of the wood in which they work.

When cooler and dryer weather prevails the blight often suddenly ceases, the slower growth of the trees causing a slight thickening of the sap and a firmer condition of bark. Blight spreads rapidly only when the sap is very thin and watery and the circulation rapid.

Now for some of the sanitary measures for the purpose of reducing the blight: if in the bearing orchard reduce the cultivation or cut it out altogether; if the orchard is in sod, and the plow must be used, let it be done in autumn but never after active growth has begun. Anyway, I believe, cultivation should not be extended beyond the 15th of June.

We cannot control the elements, nor can we prevent a succession of rainy nights and hot, sunny days, neither can we get en-

tirely rid of the myriads of midsummer insects; but we do not have to aggravate the case by furnishing hothouse conditions for the orchard or any great amount of shelter to harbor insects.

We must have a free circulation of air at all times and in every part of our orchards. On the open prairie we will need a good windbreak of trees on all sides of our small orchards, but we must trim them up and let the air in. We ought not to leave a branch nearer than within eight feet of the ground. A windbreak that may be ideal as a shelter for stock is not the kind we want for our apple trees; we want no dead air pockets in our orchards.

With our windbreaks properly trimmed, we have made a most important move toward reducing blight. We should also get our apple trees up, get their heads off the ground—we want the air to circulate under the trees; and for the same reason we must keep down the tall weeds, also the raspberry and blackberry bushes or other shrubbery that may be growing in the orchard.

Why does a free circulation of air in the orchard reduce blight? Because the atmosphere is thereby kept cooler, and the trees make a slower but more healthy growth. It also reduces moisture, as moving air does not allow so much dew to accumulate on the foliage. It also causes it to dry off much earlier in the morning, and insects, those spreaders of blight, do not congregate much where the air is kept moving. We need the air, but do we need the insects?

Now a few words about pruning with reference to blight, as the blight germ cannot enter the bark of a healthy apple tree except that of the new growing twigs unless it has been punctured or ruptured in some manner. The blight may and often does attack a tree at the place where a branch has been cut away, the germ effecting an entrance by coming into contact with the recently cut, moist stub. We may prevent this largely if not entirely by painting the wound at the time of cutting and by doing our pruning in the autumn after the tree ceases to grow, thus giving the stubs time to dry and harden before the blight becomes active the next season. If blight spots appear upon body of tree, we cut a rim of bark entirely around the blighted portion. This usually prevents further spread unless there is new contagion.

Secretary's Corner.

MEMBERSHIP ROLL FOR 1906.—On April 19th the annual membership roll for the current year stood at 1886, which is 219 more than the number of names on this roll the year before on that same date. Adding to this 165, the approximate number of life members, will make the total membership at that date 2051. Have you sent in a new member yet this year?

INFORMATION WANTED ABOUT THE POCKET GOPHER.—Prof. Thos. G. Lee, University of Minnesota, Minneapolis, desires correspondence from localities where the pocket gopher is abundant. Any of our readers who know of any places where this animal is found in unusual numbers or who have suffered from its depredations are requested to correspond with him about it.

WAXING THE GRAFT.—"I have a large amount of thin, rotten calico in strips a half inch wide in small rolls with wax on one side. In case of a hard storm this method of winding the splice is better than any other way."—Seth H. Kenney.

Mr. Kenney is top-grafting on the Gould crab a long list of varieties of winter fruit to test the value on this stock. Amongst these varieties are the Roxbury Russet, Davenport Russet, Perry Russet and several varieties of winter seedlings from his native town in Massachusetts.

CONSTANCE HORTICULTURAL CLUB.—The annual meeting of this local horticultural society (Anoka county) was held March 17th last. E. G. Williams was elected president and John Simonson secretary. This society is holding meetings monthly and considers topics devoted to forestry, horticulture and general farming. There ought to be a thousand such organizations in the state, and it would seem easy to maintain them indefinitely, to meet from house to house and take up from time to time the various topics connected with the subjects referred to.

BULLETIN ON PRUNING.—Frederick Cranefield, secretary of the Wisconsin horticultural society, has issued a bulletin on "Pruning Orchard Trees," accompanied by numerous illustrations, and he has kindly offered to furnish this bulletin to any of our members who may apply to him while the issue lasts. We are very glad to announce this here, as pruning orchard trees in Wisconsin and in Minnesota are on the same basis, and much information of value to our members will be found in this bulletin. Address Sec'y Cranefield at Madison, Wisconsin, asking for bulletin No. 8.

ANDREW WILFERT AND THE JAPANESE WALNUT.—The April Horticulturist contained an item from the reporter's notes, in which reference is made to Mr. Wilfert's success in raising Japanese walnuts, and was understood to refer to Mr. Andrew Wilfert, of Cleveland, a well known member of this society and the only one of that name known to us. A communication received from Mr. Wilfert, however, gives the information that he has had no experience in growing this fruit and would himself like to know who this Mr. Wilfert here referred to is that he might get a few of the nuts himself. Perhaps some of our members can give this information to the secretary and in this way get in touch with the right person.

NORTH DAKOTA STATE HORTICULTURAL SOCIETY.—After an interim of a year the North Dakota Horticultural Society has re-organized with Prof. C. B. Waldron as president and C. C. Churchill, of Fargo, as secretary, with a membership of one hundred and five names upon the roll and, following the plan of two years ago when the society was first started, these names have been placed upon the membership roll of our society and the members supplied with the usual society literature. There is assurance in this new movement that the society will be on a permanent and self supporting basis and perform from now on the usual functions of such an organization.

NEW LIFE MEMBERS.—Since April 18th, up to which date the list of new life members was published in the last Horticulturist, three additional names have been added to the life membership roll, as follows: S. W. Snyder, Center Point, Ia., O. C. Hilstad, Nicollet, Minn., and Chas. E. Chrisman, Ortonville, Minn. There should be many more additions to this roll, especially on the part of the younger members, many of whom will certainly stay with us to the end; and an additional remittance of \$4.00 made at any time during the year on the part of any one who has already paid \$1.00 membership fee this year will be accepted as first payment on a life membership fee, the balance, \$5.00, being due and payable one year later. On the payment of the full fee the life member will receive a handsome lithograph enscribed certificate and will be entitled to a file of the back reports of the society as far as they can be furnished, something like twenty volumes.

GRAFTING BEN DAVIS ON DUCHESS.—"In 1880 I grafted a five year old Duchess with Ben Davis scions. Four years later it began bearing and surprised everybody who saw the fruit, and it had been a continuous bearer for twenty years when a storm struck the tree while heavily loaded with fruit and split it to within a foot from where the branches were grafted on. This is a fault with the Duchess trees as a stock. It is likely to split down. The fruit borne on this top-worked Duchess was extraordinarily fine, being beautifully striped and not excelled by any fruit of this variety from Michigan or Missouri. The tree stood unprotected out on an open prairie. It passed through the severe winter of 1884-5 and has been a fine bearing tree ever since. I have grafted two hybrid trees on the same grounds with the Ben Davis since, and they have borne well, but the fruit is not half so large and fine as that grown on the Duchess tree referred to above."—Edson Gaylord, Nora Springs, Ia.

THESE HAVE SENT IN NEW NAMES.—Here follows a list of those who have sent in the names of new members for the society since March 17th, the date at which the last list was published. This list represents the number secured to this date, April 18th:

Adolph Jensen, Minneapolis.....	1	N. C. Hoffman, Maple Plain.....	1
H. Klausner, Litchfield.....	1	Henry Dunsmore, Olivia.....	1
V. A. Neil, Minneapolis.....	4	R. H. Pendergast, Duluth.....	1
Geo. C. Webb, Minneapolis.....	1	T. D. Brady, Deerfield.....	1
M. Olson, Montevideo.....	2	R. J. Mortenson, Tyler.....	1
Henry Husson, Minneiska.....	2	Wm. Cline, Bertha.....	1
J. E. Swedberg, Dalton.....	1	W. B. Cora, Minneapolis.....	1
G. W. Strand, Taylors Falls.....	9	J. P. Andrews, Faribault.....	4
A. J. Hagen, Hendrum.....	1	F. F. Farrar, White Bear.....	2
A. W. Barker, Northwood, Ia.....	1	O. L. Bohanon, Arnold.....	1
E. A. Hodgdon, Minneapolis.....	4	P. P. Eddy, Willmar.....	1
R. A. Van Nest, Windom.....	2	F. X. Ferodowill, Wayzata.....	1
W. A. Nordstrom, St. Paul.....	1	H. H. S. Rowell, Excelsior.....	1
Rev. Z. L. Chandonnet, Mahanomen.....	1	Fred Cowles, West Concord.....	3
M. E. Hammer, Heiberg.....	1	W. H. Eddy, Howard Lake.....	2
Frank Yahnke (Farmers' Institute).....	14	M. J. Dailey, Fargo, N. D.....	1
Chas. H. Northam, Minneapolis.....	1	W. L. Taylor, Howard Lake.....	1
John Bisbee, Madelia.....	3	F. H. Ellison, Minneapolis.....	1

A. G. TUTTLE.

Late of Baraboo, Wis. Honorary life member of this society since 1886.

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In Memoriam.

**A. G. TUTTLE, BARABOO, WIS.,
Died July 25, 1905, Aged 90 Years.**

(This biography was prepared by Franklin Johnson, Baraboo, Wis., for the Wis. State Hort. Society, and will appear in the next annual report of that society.)

A. G. Tuttle, one of the charter members and one of the early presidents of the Wisconsin State Horticultural Society, was born Dec. 30, 1814, in Watertown, Conn., hence was a native of that "Litchfield County" famed as the birthplace of Mrs. Harriet Beecher Stowe and other members of the illustrious Beecher family. The very air was surcharged with the love of liberty and the hatred of slavery. Mr. Tuttle, in the enthusiasm of his young manhood, became an ardent abolitionist. Before attaining his majority he made abolition speeches, and under the direction of William Lloyd Garrison he assisted in editing a little abolition paper.

At the early age of nineteen he went to New York City to take charge of a large wholesale store, being recommended for the position by Seth Thomas, the renowned maker of clocks. After a year or two of strenuous but successful work in this store, his failing health compelled him to return to his home in Connecticut.

In 1838 he was married in Northfield, Conn., to Miss Elizabeth F. Clark. Their first home was in New Haven, where Mr. Tuttle had again engaged in mercantile business.

In the autumn of 1846 he came to Wisconsin, stopping awhile in Madison, then going to Portage, where he conducted the first store ever run in Portage.

In the spring of 1848 he moved to Baraboo, where in the autumn he was joined by his wife and son, whom he had left in Connecticut. For several years he was engaged in trade, but in 1854 he purchased the farm which was his home for more than fifty years. He planted an orchard and became enthused with a love of fruit

culture that continued unabated until his death. With a view to making of Wisconsin a land of orchards, like New England, he began the culture and sale of fruit trees, thus establishing in 1858 the first nursery in this section.

When Abraham Lincoln was president and Cassius M. Clay was our minister to Russia, Tuttle & Son procured scions of Russian fruits with the hope of securing varieties that would withstand the severity of the Wisconsin climate. This was the first direct importation into the United States of Russian varieties. Doubtless the correspondence growing out of this importation led to the importation of Russian scions by the United States government which were distributed a few years later through the U. S. Patent Office. In 1866 he set out his famous Russian orchard, which has attracted the notice of horticulturists throughout the country.

In the autumn of 1904 his failing strength led him to leave his farm and go to the home of his son Herbert, at Water Mill, Wis. Here he was tenderly cared for until his death, which occurred July 25, 1905, at the age of ninety years and six months. During the spring and summer he was able to be about the house and grounds until he was stricken with paralysis a week before his death. Up to that time he retained his intellectual powers and his talent for narrating anecdotes. The funeral was at the son's home in Water Mill, but he was buried in Baraboo, by the side of his beloved wife, who died three years before, after they had lived together for more than sixty-four years. They are survived by three sons, Herbert B., of Water Mills, Wis.; Merrit I., of Fort Morgan, Col., and Edward K., of Mather, Wis.

Such in brief are some of the leading facts in Mr. Tuttle's life. Dates and data are cold and commonplace, but the Mr. Tuttle we knew and loved, *our* Mr. Tuttle, was neither cold nor commonplace. He was *very* human. He had a warm heart, an active brain, a quick eye and a ready hand. The various qualities that made the man were combined in such a way that they formed a striking personality. The vigorous intellect, the sterling integrity, the indomitable will, the tireless energy, these Corinthian pillars of his character, were reflected in the intellectual features, the frank expression, the broad shoulders, the firm tread, which made him a noticeable figure in any assembly. I should love to speak at length upon these Corinthian pillars of his character, but time forbids. It also forbids more than a mere allusion to the acanthus leaves which twined so gracefully around them. These grew mainly from the kindness of his heart and from his keen sense of humor. As illustrative of his kindness you will pardon a personal reminiscence.

One winter day, the coldest day of that winter, when the mercury was away below zero, the wind blowing a gale and the snow flying as in a Dakota blizzard, there came a rap at the door and in walked Mr. Tuttle, a vigorous old man still, though well past his fourscore years. As soon as he could get his breath he explained his visit by saying that he had heard I was not feeling real well and so had come up to see if I needed any help about doing my chores.

His keen sense of humor led him to store his memory with an inexhaustible fund of amusing anecdotes, which he knew well how to tell, and it led him into the perpetration of numberless jokes. Mr. Tuttle's jokes were peculiar to himself. He would start off in a way that would completely disarm you of any suspicion of what was coming and then treat you to a kindly and good natured sell.

Home place of Mr. A. G. Tuttle, Baraboo, Wis. This plate was made from an old and much faded photograph.

To me the most amusing feature of the whole affair was his boyish chuckle as he noted your surprise at the unexpected turn he had given to the conversation. A year ago this last summer, when in his ninetieth year, he stopped at my house on his way back from Mr. Miner's. He said he had been over to see Mr. Miner's show for a crop of plums. I was interested, and he continued: "I find I can beat him this year." Of course I was surprised, for Mr. Miner makes a specialty of plums. He repeated very positively, "*I can beat him this year* for I have got *one* plum, but Mr. Miner hasn't any." Presently the conversation drifted very naturally to poultry.

He said that for several years there had been no one to specially care for their chickens, and as a consequence they hadn't done very well, but this year he had two hens that did remarkably well. They had succeeded in raising all of the chickens they hatched. It soon developed that these two hens both set in the same nest, and by their united efforts they had hatched *one* egg!

One more feature in Mr. Tuttle's career I must mention. "There's a divinity that shapes our ends, rough-hew them how we may." Mr. Tuttle's own plan for life did not include a horticultural career. He fitted himself for a dry-goods merchant. Circumstances led him into horticulture. Advised by his physician to leave the store permanently he essayed general farming, but the chinch bugs destroyed his grain. Then he went to raising fruit. When he got into horticulture it developed that he had received a special training and equipment for the work he was destined to do. Did his experience in dry-goods give him any special training for horticulture? I think so. Mr. Tuttle would handle fruit with the gentlest touch of any man I ever saw. I cannot help thinking that one secret of his great success as an exhibitor was in his sensitive touch. Now, you look at his hand, and it indicated firmness and strength. Whence came this supersensitive touch? It is a very unusual thing in tillers of the soil. Was it not from the years of constant feeling of goods to judge of their texture? His wife, his sons, his farm, his location, his associations, yea, even failing health, chinch bugs, adverse seasons, panics—all these united to make the noted horticulturist. He never lost faith, he always saw victory ahead. When honors came to him, they rejoiced his heart and the hearts of his friends. He had earned them. Mr. Tuttle was a forceful writer and an earnest speaker. He was hospitable and genial. Probably no other home in the northwest has entertained so many noted horticulturists. The close of this long and active life was no "untimely end." He came to his grave "in a full age like as a shock of grain cometh in in its season."

AN ASSOCIATION AS AN INCENTIVE TO THE IMPROVEMENT OF HOME GROUNDS.

MRS. MILTON O. NELSON, MINNEAPOLIS.

It has been well said that he who successfully plants a city lot or makes a tree to grow in the right place is a public benefactor, for the beauty so produced becomes public property. The neighbor and the casual passer-by can see and enjoy, and even the owner himself can do no more. The converse of this proposition is equally true: the man who takes no pride in the beauty of his surroundings, who makes no effort to make his neighborhood a brighter, better, more attractive place to live in, is a public malefactor, and the room he occupies is worth more than his company. It matters not whether he be rich or poor, whether his indifference is the result of ignorance, of selfishness, of the pursuit of wealth and pleasure or of mere dullness—the community is better off without him.

There are some of both of these classes in every neighborhood, and it is just here that the co-operation of those in the first and beneficent class gets in its valuable work. If in some way those people who are intent on their own welfare can be made to see that the neighborhood's welfare is their own, that their selfishness is in reality near-sightedness—if they can be taught that wealth does not amount to much if not well applied—and if failing in all this we can perhaps shame them or coax them or coerce them into better behavior by reason of co-operation, then let us by all means co-operate.

This is just what we are trying to do in Linden Hills. There are in this Inter-Lachen region about 2,500 people, and all the classes of which I have spoken are represented among them. The Creator has done much for this locality. It is unquestionably the most beautiful suburb of this city so far as natural beauty is concerned. But while Nature did much and did it well, inartistic man has also done much to neutralize her good work. The desire to counteract the destruction of this natural beauty and to save such as is left to us has been a large factor in the formation of the Linden Hills Improvement Association. At its inception the efforts of the association were largely directed toward the securing of street improvements, such as gas, sidewalks, new bridges and the like. But during the past season they have gone farther. Population from without has been moving in rapidly; houses of all sorts and sizes have been springing up like mushrooms; and for some reason—perhaps because of the notion that a suburb is a place in which one may live as he chooses or because of the rawness of our

new settlement—the home grounds surrounding many of these new houses have not always been kept with tidiness. It was because of this air of slackness, and because of urgent suggestion on the part of certain women of our settlement, that the association began to cast about for some stimulus to neatness that should be general and possibly epidemic.

A committee appointed for this purpose arranged a contest for a series of prizes to be offered for the best kept lawns of various sizes, for the best show of shrubbery, for the neatest, most attractive back yards, for the prettiest flower garden, for the greatest improvement in home grounds and for the best kept vacant lot. About forty prizes in all were offered. The contest was well advertised by personal letter and through the city papers. But in spite of all the attractiveness of the offers, there was at the start no very general entry for competition. It was necessary for the enthusiastic ones to keep talking about the matter to their less enthusiastic neighbors in order to get life into the movement in time to begin the work of gardening. Applications for competition kept straggling in till well along in June, and when the beauty of competitive gardening began to show forth along our streets there were many good people who wished they had been waked up earlier. Now that the season is over it can be seen that the interest in keeping the home grounds neat, and the desire for flowers, for shrubbery and for the knowledge of how to grow them successfully, has been immensely stimulated by this prize competition. I venture to say that on one or two of our streets there was this season a better care of home grounds than could have been found in any other part of the city where householders do their own lawn and garden work. The improvement over the previous season was most obvious.

This unusual beauty of the gardens suggested to some of the women that a flower show for the neighborhood would be a most excellent supplement to the work of the association. A committee was formed, and the suggestion put into operation. In spite of the fact that the show was held about a week too late for the best bloom of the gardens, and in spite also of the fact that for twenty-four hours preceding the show there fell and was hurled from the heavens rain water in barrels, so that the gardens looked on the morning of the show like a wreck at sea, the show was held and was in reality a display of remarkable beauty. It was the only flower show held in the city of Minneapolis this season and was not much behind the great flower shows given down town in previous years. Financially also it was a success, leaving so goodly a sum in the treasury and so good an impression on the neighborhood that the temporary organization was made a permanent one. The Inter-Lachen Flower Association has been organized for the purpose of promoting annual flower shows and perennial flower sentiment in Linden Hills.

All this work was not done without hard labor and giving of time and effort without compensation. There were also those who did not approve of this method of stimulating the love of neatness and beauty. Some thought the giving of prizes was wrong in principle and that in practice it would lead to jealousy. Some were afraid to enter the competition for fear people would think they were working for the prizes. Others feared, and with some good ground for it, that if we refrained from throwing tomato cans in the back yard and cleaned the ash piles away from the back steps and used a mower on the front lawn, that the assessor would take note of the improvement and fine the householder on his tax assessment. Yet in spite of fears and knockings the good work grew and prospered.

The prizes given this season have been largely in the way of flower seeds, of shrubbery and plants from the various seed houses and nurseries, or of books on flower lore and the keeping of home grounds, and of magazines on out-door art. Among the association's prizes were fifteen annual subscriptions to the Garden Magazine, and several subscriptions to Country Life in America. As you doubtless know these glorious magazines are so attractive as to sometimes turn the thoughts of even an automobilist toward the garden. Our idea in the giving of prizes is that they shall be conducive to the spirit that the contest has been organized to promote.

Summing up the result of our summer's campaign, we have substantial reasons to feel encouraged. We hear people enquiring about flowers and vowing to have a brighter and better flower garden the coming year. The flower association is planning a few meetings after the holidays, when the new nursery catalogs come out. These will serve as a stimulant for garden enthusiasm to begin the coming year. We did not expect to do much the first year, but we have done far more than we had hoped for. We believe that the coming season will much surpass the past in home ground beauty in our suburb and in home ground love. Our gardens are largely made up of the hardy, perennial kinds that are planted with the intent that they shall grow better from year to year. Our women are learning more about flowers and necessarily loving them more. Our men are learning to run the lawn mowers with resignation and skill—some even with pride.

In conclusion let me say that all that Mrs. La Penotierre may say to you this afternoon on the broadening influence of a study club on the life of woman applies directly to my theme. We too are a study club. Our program is drawn from Nature's own wide open book, and our aim is that her secrets may become ours and her methods be applied in our gardening experiments.

IN MEMORIAM, MRS. A. A. KENNEDY

Margaret Belinda Butler was born in Delmar, Tioga Co., Penn., June 22, 1839. Educated in the common school, she was married to Mr. A. A. Kennedy in April, 1857, who, with seven children, survives her. Sister Kennedy passed to her spirit side of life in Idaho, January 28, 1905.

With her husband and three children she came to Cedar Mills, Meeker County, Minn., and settled on a homestead in 1864. They returned to Pennsylvania in 1873, but came back to Minnesota in 1876 and settled near Hutchinson, where they were farming till 1896, when they moved to Hutchinson, where they resided till they moved to Idaho in 1903.

Mrs. A. A. Kennedy.

Late of Hutchinson, Minn.

It was about 1884 Sister Kennedy became interested in horticulture. She devoted most of her attention to small fruits and demonstrated to a disbelieving public around her that there was money, health and happiness in growing small fruits. It was shortly after 1884 that Mrs. Kennedy joined this society, and at once became a very active member, always with tongue and pen con-

tributing her share of useful information. For nearly ten years she was one of our vice-presidents and never failed to attend our annual meetings. Sister Kennedy was possessed of a happy temperament and dispensed cheerfulness, contentment and sunshine to all around her. She was a devout Christian woman all her days, her every day life was one that millions of her sex might follow with great advantage to the race. Full well she did her whole duty in life and passed before us to a rich reward.—O. F. Brand.

SCALE ON PINE TREES.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

About fourteen years ago we bought some Scotch pine trees which in a few years showed some reddish scale insects that seemed to quite seriously injure the growth in the parts of the plantation where the trees were protected from wind. This finally got to be so bad that we thinned out every other row of trees so as to let in the light and air, as the insect did not seem to thrive well where exposed. Several years ago we sprayed with a mixture of kerosene and water and were quite successful, but it seemed almost a hopeless task to destroy all the scales, which by this time had spread from the Scotch pine to jack pine and mountain pine, though it did not seem to thrive upon our conifers.

This spring we made up our minds to go at it even more thoroughly than we had in the past, and with this end in view prepared abundant scale wash, but when we got ready to apply it the scales which were abundant upon the pines last autumn had almost entirely disappeared, so that it was difficult to find a scale or even an egg of this insect.

The destruction of this pest is a great relief, for I had thought that possibly the Central Experiment Station was the only place in this section that was infested and felt a responsibility that it might be a center of infection for what would prove to be a serious pest to our horticulturists. I do not know just the reason why this scale has so suddenly disappeared, but know that last year Prof. Washburn reported quite a large number of larvae of the lady bug among them, eating the young. It seems to me, however, that there must have been some other parasite to have made this work so very complete.

With most of our insects the history of their "rise and fall" is much the same. They increase very rapidly perhaps for a short time, when their parasites become numerous and finally destroy them, after which the parasites themselves die for want of food, and then the insects again increase; and so we have some insects that come, as it were, in waves. It will be remembered that a few years ago we had much trouble with the forest tent caterpillar, that it stripped the foliage off of almost every broad-leaved tree. But it disappeared very suddenly, due to the presence of an internal parasite which destroyed them.

BLIGHT.**A DISCUSSION.**

Mr. Wyman Elliot: I have given this subject considerable attention for the very good reason that we have had a good deal of it, but today I am just as much in the dark regarding it as I was when I began to study it, and I was in hopes we would have something brought out at this meeting that would be helpful to us. At the Kansas City meeting of the American Pomological Association they had a learned professor from Cornell University present who gave us a fine talk on the subject of blight and scab. He is devoting his whole attention to that one topic, and up to that time he said he had not solved the mystery, but he said you could stop both blight and scab by using corrosive sublimate. I had this year a sprout that I was looking after very carefully from the original Wealthy tree. It was a very fine specimen and grew thirty-four apples. It commenced blighting and is now only two and one-half to three feet high and nothing but brush and stump. I commenced to cut and kept on cutting until I cut most of the tree away. That is the remedy I employ for blight; whenever I see any blight I cut it.

Mr. Philips (Wis.): Do you sterilize the knife?

Mr. Elliot: No, I don't use it enough.

Mr. Philips: You carry it along with your knife.

Mr. Elliot: Perhaps I do, but I don't take that precaution. I would like to hear from Prof. Hansen.

Prof. Hansen (S. D.): In the Missouri society there were three subjects they agreed not to discuss: politics, pear blight and religion. I don't know whether apple blight would be included in that or not. (Laughter.)

Mr. O. F. Brand: We had a professor here thirty years ago, a professor of horticulture, who went west later and raised sheep. He gave us a talk on blight at that time, and he went right down to bed rock facts. He told us it was caused by a little bug in the atmosphere, and he told us the truth. I went to Florida and spent a part of a summer there twenty years ago looking after the blight question there. They had it very badly among their orange trees, and they were willing to pay lots of money to find a remedy that would cure the disease. I learned this definite fact, which one gentleman brought out here yesterday, that one thing that causes blight is because the trees are hidebound. The gentleman got clear up to the point, but he did not tell us what it was. He gave us a cure, but he did not tell us what caused the disease. He split the bark to release the tree from being hidebound—but I have found something better than a knife. I made up my mind that a tree blighted because the bark did not expand naturally, and if we applied something to the tree to make it expand naturally it would not split, so I applied a wash of sulphur and lime with some carbolic acid added. That stopped it, and there was an increased growth, and there was no more blight. That is all there is to it. Provide

the tree something that will keep it in normal condition. You can cause that normal condition by keeping it in a healthy and growing condition. Take a seed, and you can keep it for years dormant, and yet if it is properly treated it will expand and grow.

Mr. Geo. J. Kellogg (Wis.): I have heard a great many talks on blight. The two papers we had yesterday were the most sensible on the subject that I ever heard, even from professors. Common people know more than the professors anyway. (Laughter.)

On the subject of blight I have learned that these scientific men don't know anything about it, and if we depend on them we will not know anything about it for two hundred years. My theory of blight is the same as the facts we know about apoplexy, it is a rush of blood to the head. If there is any scab there is blight. It comes on after a sultry, muggy and hot atmosphere, and we find the most blight after an electric storm. I think electricity has something to do with it, and if I had a row of Yellow Transparent I would run a couple of wires over them.

The Chairman: In Fresno, California, they get blight, and they have no thunder storms there.

Mr. J. M. Underwood: It seems to me there is as much variation in the opinions of people in regard to blight as there is in the conditions under which blight exists. I claim that, so far as I can discover, there is no condition of the atmosphere, of the soil or in the growth of the tree but what blight will prevail; and there is no condition, so far as I am able to discover in the minds of the people who are discussing it here, but what blight prevails, and there is a great variation in your beliefs in regard to it. Some say it is owing to the condition of the atmosphere. If it is wet, and the sun is hot it will produce blight; and some say that blight occurs when there are different conditions, when there is an excessive growth of the trees—and I agree with you all, you are all right. But we have got to take the opinions of every one of you in order to get at the facts. There is no one person that is right about it so far as the conditions under which blight exists are concerned. Now the nurseryman, so it seems to me, is interested in this question financially more than anybody else. He has perhaps 500,000 or 1,000,000 trees in the nursery, and it is quite an item whether those trees are going to be blighted and injured so as not to be marketable as nursery trees. Suppose they are Wealthy, and he has 100,000 Wealthy trees, and the trees are coming on two or three years old and ready for market, but the blight comes on and destroys those trees so that he has to cut them out—it becomes quite a serious problem. I think the nurseryman has more involved in the matter than anybody else. The orchardist has comparatively few apple trees, and if they blight it does not affect him as much as though he had 100,000 trees ready to bill to his customers, and he has to cut them all out and burn them.

In my experience blight exists under all conditions. It has existed in seasons that were dry and there was nothing to cause an excessive growth, yet the trees looked just as though they were burned; and sometimes after a very severe winter when the fibrous

roots were killed and the trees were seriously injured, the blight seemed to be worse that year than at any other time. I don't think there is anything in any of the remedies that have been suggested that have ever done us any good. There is only one way in which we can remedy blight or in which we can avoid blight, and that is not to plant blighting varieties. We all know, and I think we all agree, that some varieties blight worse than others, and the best thing to do is to avoid planting those varieties. For example, I never think of planting a Transcendent or any other varieties of trees which blight. We could not afford to do it, and we do not do it when we know from actual experience that blight will spread from one variety to another, and we do know that. There are just a few things we know about blight, and there is a whole lot about it we don't know, but we know it will spread, and we know there are varieties that are more susceptible to blight than others. We have a large orchard of Wealthy. They started to blight a little in the top, and we began to put in a pruner and cut out the affected portion; we pruned the wood and burned it, and yet we did not fail to get a good crop of apples after all. Practical results are what we are after. I don't give a cent for all your theories, if I know what I know from actual experience. Of course, from a scientific experience you can demonstrate what blight is and how to cure it, and we are very glad to know all that, but we could hardly consider the proposition of slitting the bark of a million trees in the nursery where blight commenced to make its appearance. If we find, as we do, that by avoiding the planting of blighting varieties we avoid any serious disasters to our nursery stock, it seems to me that is the rule we should apply in buying trees and planting our orchards.

The Chairman: There are just two points that occur to me in connection with what Mr. Underwood has said, and that is that we should bear in mind that a good theory is the first step to a most successful practice, and where theory and practice disagree theory is the thing that is wrong, and practice is the best way to overcome the trouble.

Mr. Johnson: I am not going to talk theory, but I am going to tell you how to stop blight. I stopped blight on the Transcendent, and just as far as I sprayed the wood was healthy, and the rest was dead. The Wealthy and the Peter stood near the Transcendent. That is the best cure I know of. If you cut away the tip of the blight it goes further down. Just leave it there until spring.

The Chairman: What do you spray with?

Mr. Johnson: With Bordeaux mixture.

The Chairman: When did you do it?

Mr. Johnson: Early in the season before the fungous growth begins to make a start, about the time the scab appears; it will kill two birds with one stone.

Mr. Busse: I am growing interested in this discussion. I have a few trees, and I have been thinking this matter over seriously for some time, and I want to say that there has as yet been nothing found that will prevent blight. The nearest thing we can do to

prevent it is to cultivate our orchards only a few years, and if you start a new orchard I would advise you to plant only such varieties as the chairman suggested, those that are not subject to blight, and take the highest elevation of your grounds that you have, and then set them farther apart than you have done heretofore. I find in most instances where trees are set in low places, where the soil is more moist and the air cannot circulate so freely, that trees are more subject to blight than those planted on a higher elevation. If you contemplate setting out an orchard I would not advise you to plant Transcendent or Hyslop anywhere near other varieties, because blight will travel from one variety to another, but I don't believe as some do that it will travel from fifty to a hundred miles. That is no such thing. I think it can be found in any orchard and in any place where those varieties are planted that are subject to blight, and the only remedy I have found to be successful is to cultivate them two years and give them a good start, at least not more than three years, and then sow the orchard down to clover—and this is especially to be recommended for the Wealthy and a few other varieties that are more subject to blight.

Another thing, about cutting out at the time the blight starts, I think that a pretty hard thing to do. In an orchard of any considerable size it would probably take from a dozen to fifty men to go through the orchard and do the work as it ought to be done, and that would be too expensive to make it pay. You open the pores of the tree at the same time you cut it. I have done it, and sometimes would not see any effect from it until the next season. In those I did cut I did not see any difficulty, only I think it would be better to leave it until the next season. I do not believe it has done any good to go to work and cut, as has been suggested here, from three, four to six inches below the diseased portion, because it would be too much of a job for anybody that had from 500 to 2,000 trees to go over the whole orchard and do the work as it ought to be done. I believe it would be better to leave it until the next season, and then perhaps you do not have to cut at all.

Mr. W. L. Taylor: I believe in the old saying that "an ounce of prevention is worth a pound of cure," because I think the best thing to do is to avoid those varieties that are inclined to blight, and especially avoid planting them in a blighting situation. Plant your orchard on the highest possible ground. If you have hilly ground sloping to the north, that is the best place you can plant your trees. Don't plant the Wealthy in the lower part of the field, but on high ground, but your Hibernian you can plant almost in the mud. Your Wealthy you must plant on the highest ground you have because it is so apt to blight. Some one was talking about cutting out the Peerless tree. It does not blight on my ground. I use it in place of the Wealthy, and I get as much for it as I do for the Wealthy, and the people think they are getting the best Wealthy they ever tasted. I read Mr. Brand's statement some time ago, and I immediately went to work and whitewashed my trees. It made them look somewhat unsightly, but it made healthy trees of them. During the years I practiced it I had no blight, but I notice

I have some blight coming on again, and I think I shall have to apply it again to prevent the blight. In regard to that theory of slitting the trees to prevent blight, I tried that myself and found it worked all right. The tree must get into a bark bound condition before it will blight, and if it is split it will prevent blighting. What we want is something to prevent blight.

Mr. E. A. Smith: Yesterday the statement was made that blight was caused by a congested condition of the sap. The tree was sick. Blight in a tree is something like consumption of the lungs. It is a case of bacteria. You may call it a case of congested blood, thick blood or what you will. The fire blight is caused by bacteria. In the first place, you cannot from general observation and general practice determine whether it is bacteria or not, our observation is not clear enough; but men who have analyzed with the microscope the various forms know what bacteria are. Two years ago Prof. Bolley, of Fargo, came to our grounds and wished to experiment along those lines. He is a man of national reputation in his field, and his opinion is worth something. He worked on this theory: consumption is caused by bacteria, and the effects of those bacteria has to be overcome. He bored a little hole in every tree he experimented with and inserted a rubber tube, with the other end extending into a bottle of formaline. Two hours afterward he would cut off the tops of the trees and analyze the tips, and he would find formaline in the tip of the tree, showing that the formaline had circulated through the tree. The trees on which he operated at once began to improve and ultimately recovered from blight. But here is the trouble, the conditions are so different: if you do not provide the necessary amount of formaline it has no effect, and on the other hand if you provide too much it kills the tree. If it is not strong enough then it does not perform the office it was intended it should perform. So while it is impracticable as applied to the orchard, it did show conclusively that he could control the disease in an individual tree. Take the Transcendent crab: three years ago it blighted badly, and the past year it did not—although the location might have something to do with it. Yet the Transcendent this year in certain locations blighted as much as the Wealthy. (Applause.)

Capt. A. H. Reed: The experience of a man like Mr. Underwood ought to be worth something. I have had some experience with blight the past season. I have two hundred apple trees, set out in 1900, one row of Hibernial, one of Wealthy, one of Patten's Greening, one of Peerless, one of Whitney and one of Transcendent. As I said before, they commenced to blight in June. As soon as I saw the blight commence on the end of the limbs and sprouts I not only cut off the blighted part but cut out all of the sprouts and small limbs that I could handily with my pruning knife, and where such pruning was done there was less blight after. I am satisfied that the only way to arrest the blighting of apple trees is by pruning. A tree that has not sufficient root power to feed its top to the extreme top branches is quite sure to blight, therefore I am satisfied that blight is caused by the lack of sap food and not bac-

teria. Those professors whose theory is that blight is caused by bugs, insects or bacteria probably have never seen an apple tree, and their discoveries are mostly "theory."

Mr. E. A. Smith: I don't think the professors have had a proper chance. (Laughter.)

The Chairman: I cut Mr. Reed off yesterday. I am sorry he and Philips are so hard on the professors. I am going to give Prof. Sandsten a chance, and he is the last man I am going to allow to speak on this subject.

Prof. E. P. Sandsten (wis.): After all that has been said here and especially after the opinion the gentleman expressed about professors my experience will probably not count for much. (Laughter.) I want to explain that blight is due to bacteria, and I think I can demonstrate it to your satisfaction. I can take the germs, or the sticky substance that exudes from a diseased part of a tree, and I can take that and inoculate another tree with it and produce blight, and if that is not proof enough I do not know what kind of proof you would ask. (Applause.) We have performed these operations in our orchard, and we can inoculate any tree, no matter whether it is hidebound, no matter what the conditions of the tree may be, whether it is a rapid growing or a slow growing tree, if it has sufficient root system we can produce blight. When Mr. Smith spoke he suggested that the treatment must be internal, and that is probably a step in the right direction. The difficulty is that we cannot give a treatment that will be of a practical nature, and that is what the practical man wants. The scientist finds the nature of the trouble, but oftentimes the difficulty is in finding a remedy. In this case it is conclusively proven that blight is caused by bacteria, and, like original sin, they are always with us. One gentleman said there was great difficulty in cutting out the branches. Why not cut them out when blight makes its appearance? We should cut them out six or seven inches below the affected part and then disinfect the knife. I don't know that I can add anything more to what has already been said.

The Chairman: I see Mr. Moore wants to say something, and I am positively going to conclude this discussion with what Mr. Moore may have to say. (Laughter.)

Mr. O. W. Moore: We have blight in several different forms. We have spur blight in the spring at blossoming time. We have bud and fire blight during the summer. This has been stated and practically proven by the class of men to which the gentleman belongs who spoke previous to me. That it is a bacterial disease there is no question in my mind. You will find the disease at the junction of the live and dead wood in any blighted tree. It is a sticky, mucilaginous substance just under the bark, at the junction with the bark, which exudes and is carried from tree to tree. If this is not true, how is it we get plum blight? That is carried over the winter in some form. It is stated that it is carried about by bees and insects that have access to it, and that is what causes plum blight, with which every orchardist has more or less difficulty in Minnesota—so it must winter over in some form. There is another

theory I have thought of, but I do not say that it is a true one, and that is that it is carried everywhere by bees. They carry it into their hives, and then in the spring they distribute it in the blossoms which they visit. It seems reasonable to me. The twig blight is inoculated in the same way, in my opinion. The tips and the last leaves of a young growing tree are very delicate indeed, and they are susceptible to inoculation, in my opinion. Why do some trees blight worse than others, you may ask in that case. For the reason that some growths are very much more tender than others, and they are much more susceptible to disease in that form. I wrote an article on blight and had it printed in the local papers in our town, and that is the theory, the idea I tried to convey. The remedy I do not know. It was stated by the gentleman who spoke before me that it was bacteria, and it is also so stated by the authorities at Washington. Those men are employed by the government for the purpose of enlightening the people, and they would not be permitted to send out statements that are not true they have been proven by men who are employed for that purpose.

The Chairman: We have about fifteen minutes more to devote to this subject if you wish. (Great laughter and applause.)

Mr. C. W. Merritt: This seems to be a theory and not a remedy. I really do not believe there is any remedy, and the one that has been suggested is not a good one, that is, not to plant any trees that blight, because the Wealthy is one of the worst blighters we have, and we could not very well get along without that. If a limb blights this year it will not blight next year. It will run back just so far and then stop. After a while that will dry up and drop off.

Mr. Pond: I would like to have Prof. Sandsten tell us just how to disinfect the knife after we cut off those blighted portions of a tree.

Prof. Sandsten: I simply take carbolic acid, four or five per cent in water, and after each cut dip the knife or pruning shears into the solution. Just take one dip, that is sufficient to disinfect it.

Mr. C. E. Older: Capt. Reed says trimming back will cure it, that is, cutting the limbs back when the blight appears. I used to do that, and I cut the tree away entirely. The professor says we must disinfect the knife; I used two knives. It did not seem to make any difference whether I cut with one knife or the other. One gentleman says he sprayed with Bordeaux mixture. I sprayed mine three times with Bordeaux mixture.

The Chairman: And then you had blight?

Mr. Older: Yes, it did not make any difference. They did not blight so badly as some others, but a good deal more than I liked to see. Underwood tells us to plant varieties that do not blight. I have got a row of Oakabena that blighted very badly, and they never blighted before.

Mr. Wellington: I believe there are no conditions under which blight is not found. You find it where there is plenty of rainfall, and you find it where it is excessively dry. You find it where they

have to irrigate, and you find it where they have fifteen inches of rainfall in a year. I remember one year, five or six years ago, when it did not rain in the winter, and the creeks were turned bottom side up in the summer, and everything was absolutely dry. I paid \$2.50 an hour for a two inch flow of water and thereby saved my trees. That year we had as much blight as any other. I will say this, it is considered by the agricultural professors, and I think they will agree, that they have found no remedy for blight whatever. They keep it under control by cutting it off, by making sure of always cutting off enough of the blighted portion to cut off a part of the healthy wood. They control it in that way. They have no remedy for it. As far as the hidebound condition of the bark is concerned, that occurs mostly in a wet season when, I think, the wood grows faster than the bark is able to expand. Splitting, which has been advocated here, I consider a good deal like the pruning question. Every man has his own theory of pruning trees, and every man believes that his way is the only proper way. So it is with this question of blight, every one has a theory, and I believe the best way is to adhere to one's own theory. I believe cutting will cure it.

Mr. Nils Anderson: What do you do with the limbs you cut off?

Mr. Wellington: I burn them.

Prof. Huston: I heard a remark just as I came in on this question of treatment. I believe we all agree that the tips are tender and that blight attacks them. I have occasion to go over the horticultural publications as fast as they come out, and the whole scheme of orcharding in the Ohio and Mississippi valleys has changed in the last twenty or twenty-five years, and that change has been in the direction of producing soft wood in trees as against firm wood. You cultivate an orchard, which induces a nitrogen growth; you apply barnyard manure, whose distinctive constituent is nitrogen; you plant legumes in the orchard, whose principal constituent is nitrogen—and it has a tendency to produce a soft growth of tissue, which is very susceptible to attack. If you wish to successfully attack blight you must take a broader view of the question. You must take the whole question of orchard management into consideration. The origin of blight is still a question, but what we shall ask ourselves is: Can we adopt a scheme of orchard management and tree breeding that will strengthen the trees and make them more resistant? I think there is nothing more instructive in this study than the scheme of breeding wheat plants. It has been clearly shown that wheat plants may be so bred that it is possible for them to resist rust. That has been shown for sixty continuous years. You must take a broad view of it. (Applause.)

The Chairman: I agree with Prof. Sandsten and endorse what he said.

Mr. Underwood: You had better sit down then.

The Chairman: I agree with you. I think it is a nice thing to get all these theories together.

Now I am going to call on "Professor" Philips. We have not heard from him on this subject, and I am going to give him a chance.

Mr. A. J. Philips (Wis.): I don't see why you should want to call me professor. I don't think I have anything to say. I think Prof. Hansen made the best speech on blight that has been made today. I think we have fooled away a half hour for nothing.

Mr. Underwood: You had better sit down then.

Mr. Philips: Yes, I thought the same thing when you were up. (Laughter.) I made a fellow mad once in a meeting of a horticultural society. He got up and said, "Mr. President, I have been studying this blight question thoroughly, and I have discovered how we can stop it on the limbs of the trees every time, but I have not found out how to stop it on the butt of the tree. I would like to have some man tell me how to stop it on the butt of the tree." I said, "You are like the man trying to get religion. He said he could not get it, he had tried for a week, and the preacher told him he had religion since Saturday night and did not know it." By the way, he carried around with him a Hyslop to show the blight. I said, "You have stopped the blight and don't know it. There is no surer way of stopping blight than by cutting the tree off at the ground." (Laughter.) He asked me if I thought he was a fool. I have talked with governors and with senators at Washington, and I don't know any more what blight is or how to get rid of it than I did before.

The Chairman: I don't agree with Mr. Philips when he says we have not got anything out of this discussion this morning. I believe this has been a very profitable half hour we have spent in discussing this question of blight, and I believe we have got something of value out of it. The remarks have been clear, scientific and practical, and when this matter is properly edited and presented in our report I think you will be really glad to have taken part in it.

DON'T PRUNE!—Most amateurs worry themselves over what they consider the intricate problem of pruning. My advice is simply this: Don't prune! Avoid the annual trimming that ruins so many of our gardens. There are many more shrubs ruined by the pruning mania than by any one cause, and the worst part of it all is that the damage is suffered by just those people who would most appreciate having a few good shrubs. After the thinning out of surplus specimens the only attention that the shrubbery needs is a thinning out of the old growth to make room for the new season's wood, and, of course, the removal of any dead or dying branches. Remember that shrubs do not need the attention of the pruner to make them grow; pruning is only a means to make the garden look neater. And remember this golden rule: "Prune after flowering." This means that a late flowering shrub like the hydrangea can be pruned in the spring because the flowers are produced on the growths that it will make in the summer, but it is just as satisfactory to prune it in the winter time. The early flowering shrubs that flower on the growths of the previous season may be pruned in the spring, but not until after they have done flowering. Therefore spireas, lilacs, deutzias, golden bells, and such like, must not be cut back if you want to have flowers the same season. They will in all probability require some reduction of the top, but it must be done by reducing the number of the growths, rather than by shortening.—Leonard Barron in April Garden Magazine.

FRUIT PACKAGES.

A DISCUSSION.

Mr. A. K. Bush: For apples we have used the bushel basket with wide slat covers. They do not cost much, we buy them for about a shilling with the covers. Apples ship very nicely in these baskets. We picked from a couple of Wealthy trees that have been out in the hog orchard a dozen or fifteen years twenty-two of those bushel baskets; we shipped them to the city, and they brought us about one dollar a basket. This was a good profit for a couple of trees. The baskets were emptied, the covers put on and sent back to us. We filled and shipped them three times, although we are 125 miles from the city. The baskets can always be used, and they are sold the farmers at low price; there is practically no cost for the container, and the fruit ships very nicely. I believe it is better than the box that comes to us from the coast or the barrel that they use in the east. Barrels are rather expensive, costing sometimes as high as sixty cents apiece. The barrel is too large a package anyway. If your fruit is not nicely packed it becomes badly bruised before it reaches its destination. I think the baskets are the practical container for the nearby market, and they suit the grower, dealer and consumer better than anything else we can use. That has been my experience. If any one has had an experience different from that or has a better method, we should like to hear it. I believe we can open up a profitable discussion along this line, get the experience of some of our shippers and growers and show that it is worth money to them and that their time is well spent in coming here.

The Chairman: I like this style of package Mr. Bush has spoken of very much, and I know of a number of cases where it has been used to excellent advantage.

Mr. Seth Kenney: I would like to inquire of Mr. Bush where those packages can be obtained in quantity.

Mr. Bush: There are quite a number of dealers here in the city that are handling them. I got mine here in the city.

Mr. Benjamin: Have you had any experience in the use of paper boxes in shipping strawberries, or are they just as good as wooden boxes?

Mr. Bush: My experience is limited; I have used wooden boxes altogether. Has any one had experience in shipping small fruits, such as strawberries, raspberries, etc., in paper boxes? I have never used them.

Mr. Benjamin: There were a few of those paper boxes sold in our town last year, but I never bought any of them. I would like to know, however, how they work.

Mr. Nils Anderson: I have used a few of the wax lined boxes for strawberries and don't like them.

The Chairman: What is the trouble?

Mr. Anderson: They were not stiff enough, according to my notion.

THE MAPLE MONARCH.

Written for the "Horticulturist."

Tall, stately, with wide sweep of branch,
Resisting well the winter's avalanche
Of snow and sleet. The fiercest gale
Had small effect, but a moaning wail

A handsome specimen of the Rock Maple, standing on farm of J. O. Weld, Mound (Lake Minnetonka), two feet in diameter at butt and sixteen feet from ground to first branch.

Came from the soul of the monarch great,
As it stood like a regal king in state.
It shielded oft from the norther's blast,
In summer a grateful shade it cast,
And the birds swept thru its branches green,
While 'neath its boughs were the children seen
When schoolroom tasks and graver cares
Had never a part in their affairs,
With fifty years of strength and vim,
Of stature great, intact of limb—
The tornado o'er it light had sped—
But alas, for the glory forever fled!
They sacrificed the giant there
When they opened up a thoroughfare.

—Charles H. Hansen.

CHOP TALK NO. 4,

WYMAN ELLIOT, MINNEAPOLIS.

In digging apple trees this fall, a very great difference was plainly seen in the size and appearance of trees in the same row. I questioned why there was so great a variation in the growth and productiveness of seedlings and trees of the same variety, under similar conditions, where the soil seemed to be of an even texture and fertility. What could cause the difference in thriftiness? Was it bud variation or some unseen affinity between the soil and roots of that particularly large tree? With grafted trees this is in a measure explained by lack of affinity between scion and root. Then again all trees of the same variety do not grow alike when grafted on seedling roots, even when grown from seed of fruit from the same tree, some being large and some small weaklings.

In all orchards there is a wide variation in tree growth and productiveness. I know of no way to produce a uniform growth, in nursery or orchard row, unless more care is taken in selecting trees with the same kind of root system and which thereby grow the same vigorous tops.

We have one Pomona currant bush which produced, two years after planting, six boxes of fruit and the following year yielded eighteen boxes, the bunches being so large a man picked them in one hour; other bushes, in the same row, produced not one-half as many. Here is an instance of bud or some other variation from normal productiveness. I would advise any one interested in producing new or improving old varieties to choose these exceptionally

productive plants from which to take cuttings or scions for propagation. The best tree, shrub or vine is none too good for planting, and the great proportion of our choicest fruits have come from these wise selections.

The wonderful improvement of varieties made by Luther Burbank in the last few years has given a great impetus to seedling fruit raising, and many there are who have partaken of his enthusiasm for seed planting. There is a certain fascination about seed planting that grows on one, till his zeal so increases that every seed is looked upon as an embryo plant containing great possibilities of fruit or flower.

Plant seed! Plant seed! Watch and wait, wait and watch with patient care the opening of tiniest bud or flower. Each has a mission to perform, and there is no foretelling what splendid fruits may yet come from the seed *you* save and plant.

There is great economy of time in hoeing and weeding bush and cane fruits in the fall, especially those not needing cover for winter protection. It is much easier killing weeds, grass or foreign growths, and helps advance the spring work. As much can be accomplished in one day in the fall as in a day and a half in the spring, when the grass is firmly rooted.

Currants, gooseberries and all hardy shrubs, which start an early growth in spring, may be safely transplanted in the fall. Raspberries (red and black), blackberries, grapes and all half hardy and tender shrubs are best planted in the spring, after the ground is warmed by sunshine and early showers.

In the planting of all kinds of fruit and flowers the greatest care should be taken to keep the roots well protected from drying winds and sunshine. A very good way is to thoroughly wet some burlap sacking to wrap around the roots. If these timely precautions were more often taken, there would be fewer complaints from planters who patronize tree agents. Many farmers after receiving nursery stock care for it much as they would a piece of machinery, instead of treating it as a live tree whose sap cells soon dry up when exposed to the air.

I was out in the country where they were delivering trees. I noticed farmers' wagons with bundles of trees in them without any protection for the roots, and there was one man going up the street with a bundle of trees on his shoulder. There was no straw or anything of the sort in the wagons, and they dumped those trees into the tail end of the wagon and then drove home from four to fifteen miles in the country. Is it any wonder that trees die?

The patrons of the world's markets are very exacting. The best always brings the highest price. No matter what you have for sale, whether it be town lots, nursery stock or the product of farm, orchard or garden, commercially it is graded as to quality and priced according to its apparent or real value as looked upon by the purchaser. If you grow scrub stock you must expect scrub prices; if you grow cider apples you get the price such stock is worth for cider; if a little better grade is grown you may expect a better price; if inviting, neatly boxed, fancy fruit attracts the purchaser, top prices will be obtained. There is always plenty of room at the top for the most ambitious and enterprising fruit grower. The best apples on our market are selling today for \$2.25 per bushel. Why? Because the supply of that kind of fruit is short and the demand good. Which of the growers is making the most real profit from his crop, Mr. Go Easy or Mr. Up To Date? Honest, intelligent effort, when guided by true business principles, always receives its reward.

Only in exceptional localities, where extra careful management was bestowed, did the plum crop of 1905 prove profitable. The successful growers made money from their plums. Why? Because they used intelligence in selecting varieties, preparing the ground, planting, cultivating, pruning and spraying. It is and always will be the painstaking grower of any crop who gets the best remuneration for his efforts and good prices in bad years, when the slack, shiftless, easy going growers are complaining about poor crops and unproductive trees. I heard Prof. Simpson say "Plums don't pay for the land they occupy. It is not a profitable crop." On the other hand Mr. Wm. Marshall, of Madison, Wis., says his plum orchard brings good returns. Why? Because he uses intelligent, up-to-date management in growing and marketing. Insect pests, parasitic diseases and unpropitious weather conditions have prevailed the past season, and it is in such years that Mr. Slackness gets left and Mr. Up To Date, with his intelligent management, gets good crops and a full purse.

The past season has been a very good test year to help decide which varieties of plums are most profitable. Our experience with over thirty kinds leads us to believe the Paul Wolf, Bender, Rogers No. 1, Lano (Americana)—all the same variety of plum—is the most profitable to grow in our locality on clay soil. It has out-yielded any other variety and brought good prices. Being a freestone the housewife prefers it to most varieties for culinary purposes. It is very productive, medium early, easily propagated by grafting or from sucker sprouts or root cuttings, a plum I can unhesitatingly recommend for every farmer to grow who has timber land soil.

In selecting trees, grown from seed from the T. E. Perkins' and other choice seedlings, for planting in our new seedling orchard last spring, only the best, showing vigorous, robust growth, were chosen. We found a wide variation in habit of growth, some at two years old being five and one-half feet in height while others were not more than three feet. We selected those having the best root systems and with the tops as free from thorns and spurs as possible.

In digging the holes for planting, the surface soil was placed on one side and that from the bottom on the other. The holes were dug eighteen inches wide and deep; then the sides were sloped in to fill within six to ten inches of the top and the roots spread out evenly; then the soil taken from the surface was filled in to cover the roots, treading it down gently but firmly; after which the soil taken from the bottom of the hole was added, leaving the surface around the tree a little dished or lower than the general level. Hoeing and cultivating was kept up till August 20th, when all cultivation ceased. About November 10th, the trees were carefully bent over to the ground and covered with soil, to protect them from rabbits and winter's cold. Hereafter only wrapping or painting the bodies with mineral paints, scented with carbolic acid, will be used for winter protection.

In doing all kinds of work there should be some definite plan or object. The horticulturist must, of necessity, be an experimenter; therefore he should have some definite plan or a well grounded reason for doing everything undertaken. With not a few there are too many uncertain methods in their work.

Never make up your mind you cannot do a thing that needs to be done, and never put off till tomorrow that which needs doing today—tomorrow may never come. The opportune time often comes but once in a life. We sometimes look back regretfully, thinking how much better we might do had we our lives to live over again; the right idea is to do faithfully the things of today, forgetting the failures of the past.

The pursuit of horticulture in this climate is not a bed of roses nor an easy road to travel; each one entering its service must learn his lesson in the hard school of experience, and if he is extremely persistent may eventually succeed.

FOOD OF THE GARDEN MOLE.—A careful study of the stomach content of 67 moles was made by L. L. Dyche, of Kansas. Live worms were found to constitute 72 per cent of the entire food. The moles had eaten myriapods, grasshoppers, insect eggs, larvae and various kinds of other insects. About 4 per cent of the food was of vegetable origin, this including the seeds of grass vegetables and other plants, as well as small quantities of corn.

MY MODEL TREE.**EDSON GAYLORD, NOBA SPRINGS, IA.**

The writer of this article, a faint reproduction of whose form appears at the foot of the ladder in the accompanying illustrations,—exceedingly faint in one instance—has taken this way to forcibly illustrate a principle involved in the successful growing of apples in the Northwest. It is deduced from a personal experience of fifty years on fourth, fifth, and sixth rate orchard sites, on a scale of one to seven. His best site ranges no higher than four. Back in the fifties he set seven hundred trees grown on tender roots.

Today there are two Duchess and one Transcendent living of all that number. At that time he cultivated the ground about them thoroughly. Since 1885 he has made a special point to secure trees growing mainly on their own roots, planting such varieties as Hibernial and Virginia crab, and has ceased cultivating excepting a small space immediately about the base of the tree, which is kept clean to make it easy to detect insects and protect the trees against rodents preying on them during deep snows. When these trees have grown five to seven years he has top-grafted them with other known varieties, taking special care in setting the scions and training the new growth to have it, as far as possible, growing *towards and not away from the sun*. The trees are nearly all

grown on the plan shown in the accompanying illustrations, which represents a "model tree" as seen from the northeast side. He sets all his apple trees inclined slightly toward the sun, training the heaviest side to grow in that direction, whereas ninety-nine out of a hundred orchard trees growing naturally show their heaviest growth on the northeast side, working out thereby their ultimate and certain destruction.

The writer of this is here endeavoring to show the imperative necessity of growing apple trees in the Northwest towards the sun. In planting such trees do not follow the advice that says to set them slanting towards the three or three-thirty o'clock sun, but rather to the one o'clock sun or, at least, not later than the one-thirty sun. I would nearly as soon set a tree leaning northeast and be done with it as to set one leaning southwest. Thousands of trees have gone to a slow and lingering death by setting them slanting to the southwest, as so often instructed to do.

All agree that an apple tree here in the Northwest, under our dry air and burning sun, sends most of its sap into the branches on the northeast side, and for this the writer has found a remedy, which is to clip off nearly all of the branches that grow on the northeast side, cutting them off close to the trunk and keeping them cut off until the tree is in bearing. This will ~~also permit a convenient opening to slip up a ladder to gather~~ the fruit in the top of the tree. As soon as the tree begins to bear, it seems that the habit of growing in this way has become fixed, and from then on the tree will need no further care and will live to a good old age and continue to be self-protecting.

Following this advice will enable the orchardist to do away with a thousand and one devices that have been and are still used. Think of one growing apples in among the various kinds of shrubs and bushes set on the sunny side of the apple tree for protection. Do your best, and sooner or later every device herein described for self-protection will prove an eyesore and a failure. Cutting off these northeast shoots forces the tree to feed the branches of the sunny side of the tree. In addition to this, I take special care by mulching of such roots as are exposed to the sun.

The tree shown in the accompanying illustrations—and in each illustration the tree shown is the same and the point of view the same, the one having been taken with the leaves on and the other without—is a Fall Orange top-grafted onto a Virginia crab, and is about twenty-five years old. It bore last fall a crop of three barrels.

The writer of this article planted his first apple trees in northern Iowa in the spring of 1854 and was eighty years old last October, but is still nimble enough to ascend the ladder and gather the fruit, as he is seen about to do in the accompanying illustrations.

THE IMPROVEMENT OF OUR NATIVE PLUMS.

PROF. E. P. SANDSTEN, UNIVERSITY OF WISCONSIN, MADISON, WIS.

It is sometimes interesting and profitable to look backward upon the history and development of certain fruits, and to see where improvements have been made and where mistakes could have been avoided. This taking stock, as it were, is not only helpful but important, as it gives us a better understanding how certain fruits have developed and along what line the development has been most rapid. It is true in plant improvement, as well as in other lines of work, that advancements are made not often along the lines of least resistance but along lines which have been started by some person or persons. We are by nature imitators, and if a start is made by some method, this method is invariably followed by others.

In the improvement of our native plums this fact is very evident. The first trees or seedlings were taken from the woods and placed under domestic conditions, and through the influence of culture considerable improvement resulted. Seeds again were taken from these wild trees, and by more or less careful selection new varieties were produced. Then, too, it was first thought that because the plums in their native state are growing in clumps or in thickets that they would naturally do better under such conditions under cultivation, and hence we find that the early plantations were planted on this plan.

Up to comparatively recent time little or no systematic breeding has been done; consequently we have a small number of crosses, or hybrids, as compared with the number of seedlings.

At the Wisconsin Experiment Station work was started about fifteen years ago by the late Professor E. S. Goff, who had great faith in the development and future of the native plum. A great number of seedlings have been grown in the station orchards, upwards of eighty thousand, during these intervening years. About eight hundred of these seedlings are still growing, though most of these are waiting for the hatchet. The parents of these seedlings were grown in the orchards with the hope that they might cross and that some trees from such crosses might show an increase in size and quality.

The result of the work today while not discouraging is nevertheless not commensurate with the amount of labor bestowed upon it. Out of the total number of eighty thousand seedlings, we have four or five which would be considered satisfactory and superior to the existing named varieties.

The method of growing these seedlings was briefly as follows: Seeds from varieties like the DeSoto, Wyant, Quaker, Forest Garden, Hammer, Hawkeye, Ocheeda, Surprise and others, were taken in the fall, stratified and buried during the winter. They were planted in the spring in rows four feet apart and one to three inches apart in the row. The seed was covered to a depth of one-fourth to one-half inch. To prevent drying or crusting the ground, boards were placed over the seed until the seedlings reached the top and were ready to unfold their leaves. The seedlings were permitted to grow in the nursery row for one to two years, depending upon the size attained, when they were planted out in the trial orchard in rows eight feet apart and four feet apart in the rows. In order to hasten the fruiting a large number were top-grafted on their own stock.

Professor Goff had the idea that in this limited space the trees would develop sufficiently to show the character and quality of the fruit, and save room, as the number of seedlings occupied considerable area. They were allowed to fruit a number of times before the final selection was made.

From this great number of seedlings it will be seen that the per cent of really good varieties is exceedingly small, not one in one thousand. Then, too, we have found that there is a great variation in the size and quality of the fruit from year to year. A seedling one year will show a very superior fruit, while the following season it may produce a crop of small and much inferior fruit, so that one season's test is not sufficient to judge the value of the seedlings. They should be fruited at least three or four years before final judgment is pronounced. We have also found that a great mistake was made in planting the seedlings so close together. They were not given the show that trees have in a permanently planted orchard. They were also subject to disease, especially the brown rot, due in a large measure to the closeness of planting. Then, too, it was difficult to thoroughly cultivate the ground with the trees so close together. We are now growing the seedlings twelve feet apart each way, and we get much better results. This is in brief the method pursued at the Wisconsin Experiment Station in growing seedlings.

In reviewing the work done by Professor Goff and what has been done within the last three years, I am of the opinion that there is little encouragement for the production of really superior varieties by this method. I have come to the conclusion, after much study and observation, that our native plums come practically true from seed. We can invariably by looking at the fruit and the tree

of a seedling, tell the parent or parents. The most pronounced in this respect is the Wyant. The fruit of this seedling is uniformly the Wyant type, not only in color and form but in quality. The same is true with the other varieties, though perhaps to a lesser extent.

Prof. E. P. Sandsten, Horticulturist at the Wisconsin State Experiment Station.

The old idea that plum trees should be planted in groups or thickets is certainly wrong. The copying of nature's method in this respect is not desirable, besides in fruit growing we do not aim at imitating nature to attain our desire but rather to supplement and improve on nature's way. It stands to reason that trees planted in groups, closely together, do not have the advantage of trees far apart. The argument that all trees are better protected when grown in clumps is hardly valid, since trees so planted or grown are rather short lived as compared with others planted at proper distances apart.

Our native plums are perfectly hardy and will stand alone better than when planted in groups. Not only this, but I have found invariably that farmers and fruit growers are prone to plant all their fruit trees too close. A plum tree in order to attain its

highest perfection should be planted from sixteen to eighteen feet apart, even twenty is desirable with some varieties. We cannot expect the best results when the roots of the trees are forced to occupy a small area and where the roots of the different trees are striving for possession of the ground and the plant food therein.

It should always be the aim of the grower to eliminate as much as possible the natural struggle for existence that the trees have to contend with in nature, as this struggle results invariably in poorer fruit and lessened productivity. The fact that the wild plums and wild apples found in many sections of Wisconsin and Minnesota are grown in groups or in clumps is no argument for growing them in the same way in the orchard. The main reason why plums and apples in nature grow in clumps is due to lack of proper distribution. The fruit from wild trees naturally falls around the tree, and there the seeds start to grow and seedlings spring up. Hence it is that in nature the trees grow in groups and not at intervals as in the orchard.

I do not desire at this time to enter into the discussion of varieties, but I wish to point out that the number of varieties of native plums is increasing with leaps and bounds. While this is a sign of great activity among the fruit growers, it also has considerably many advantages. The greater the number of varieties, the greater the number of perplexities that arise, and the more difficult it becomes for the ordinary fruit grower or farmer to select the really best varieties. It would be better for all if all the inferior varieties were wiped out and a dozen of the best ones left from which the grower could make his selection. Then, too, people in general have a mania for introducing new varieties of seedlings regardless of their value.

This is a question that the horticulturist ought to take up and consider if it is a fact that not one in a hundred of the varieties introduced are really worthy of distribution. I realize that the introducer has a motive which is not altogether selfish in introducing a new seedling for a new variety. We are all ready to aid in the development of horticulture, and many well meaning persons think that the introduction of a new variety regardless of its real value is a service to horticulture. This is not always the case. We have today an almost endless number of varieties of the native plum, causing a considerable confusion not only to the nurserymen but to the planter. The same is true with apples and other fruits. It would be far better for all concerned if the lists of varieties should be cut down to a relatively small number, and there should be

means provided whereby the introduction of new varieties could be controlled so that only worthy ones would be placed on the permanent list.

It is a fact that each section or region has developed its own list of varieties, for it is well known that varieties have local adaptations, and this should be borne in mind by prospective planters. I presume you experience the same difficulty in Minnesota that we have in Wisconsin: namely, the invasion of nursery agents from outside states, selling trees wholly unfit for our conditions. This is especially true in regard to plums. The eastern nurserymen are not well enough acquainted with our local conditions and demands; consequently in selling plum trees our experience at least indicates that the domestica and Japan plums are invariably recommended and sold to our growers for hardy plums. The consequences are very disastrous to the development of plum growing. Our farmers and growers have become discouraged and gotten the idea that all plums are tender and subject to winter-killing. The same conditions are true, though to a less extent, in regard to apples. In spite of agitation and influence through our papers, a large number of these tender trees are sold annually in our state.

You will naturally ask, along what line or lines lies the future development of our native plums? Surely not along the lines we have been working, for I firmly believe that we have nearly reached a limit. Most persons will agree with me that there is no greater difference in quality and fruitfulness among our improved varieties than among the native trees in the forest. This fact would indicate that the improvements made have been due almost entirely to the improved conditions under culture. The future developments and improvements must come from definite crosses with the best types of either the domestica or Japan plums. Personally I have great hopes of hybrids with the Japan varieties. What we need in the native plum is not so much larger size as better handling and shipping qualities. Then, too, there is room for improvement in quality. A medium sized plum is better in many respects than a large size, especially for preserving and canning. So while large size is a desirable quality, it is less important than fruitfulness, good shipping qualities and flavor.

Mr. C. S. Harrison (Neb.): Do seeds grow better if you plant them immediately after they ripen?

Prof. Sandsten: I don't know. I did it one year, and they did not give as good results as they did by stratifying them. We are mainly planting seeds of small seedlings.

Mr. Elliot: What is your object, to increase the hardiness?

Prof Sandsten: We do not need to increase the hardness of native plums.

Mr. Elliot: The cross should be hardier.

Prof. Sandsten: Of the domestica?

Mr. Elliot: No, if we are crossing the Abundance and the Burbank, we would get something from one side and something from the other side.

Mr. Geo. J. Kellogg (Wis.): You have nothing better than the Surprise all things considered.

Prof. Sandsten: I do not like to say that because we have trouble in getting them. I know Mr. Kellogg has been kicking because he could not get any.

The Chairman: Don't you think the Surprise is a good tree?

Prof. Sandsten: It is the best all right.

Mr. S. W. Davis: The Surprise is not good in the western part of the state; it does not bear much fruit.

Mr. McLeran: Did Prof. Sandsten say the seedlings are cut and then grafted back on their own stock?

Prof. Sandsten: Yes, that is what I said.

Mr. Elliot: Would you not stand a better chance of getting quicker fruitage by budding them on a fruiting tree?

Prof. Sandsten: Yes, we have done that, but we want to see the fruiting tree.

Mr. Elliot: Would it not produce fruit quicker?

Prof. Sandsten: Yes, on an older tree.

Mr. W. L. Taylor: Is the Surprise prolific with you?

Prof. Sandsten: Yes, very.

Mr. Kellogg: How did the Surprise compare this year with other plums?

Prof. Sandsten: I don't know; it is due entirely to the season.

Mr. Benjamin: Are the Japanese better than the hardy plums?

The Chairman: Mr. Anderson has been wonderfully successful with them at Lake City.

Prof. Sandsten: We have them at the Wisconsin station too.

Mr. Benjamin: Grafted on the native kind?

Prof. Sandsten: On several kinds; on the sand cherry and on the native kinds too.

Mr. Elliot: Does it not increase the hardness?

Prof. Sandsten: Not very much.

Mr. O. F. Brand: In growing new seedlings if we take the seed from a tree that is very productive and brings to perfection an immense crop of fruit, will that make any difference in the productiveness of the seedling?

Prof. Sandsten: Seed from a productive tree is preferable to anything else. There is one thing that has not been emphasized here, that is the individuality of plants. Plants are individuals just as much as you and I are individuals, and we should look upon plants in that way and select from individual trees that have the best qualities. In planting seed you should consider that point.

Mr. C. M. Loring: This is a matter I have been quite largely interested in from what I have seen done in California. As you know, I offered a premium a year ago, or I do not know but that it was two years ago. In looking over the premium list I find there is no premium offered for plums. I do not know why the secretary should have left it out, but in order that he shall not do it again I wish to make a deposit in the Farmers' and Mechanics' Savings Bank to remain there until such a plum as comes up to the conditions established by the committee shall have been brought before the society. I know nothing about the quality or size of the plum myself, but it is all in the hands of the committee, and that committee knows what is required to bring it up to the standard. I know very well there are hundreds and thousands of dollars that go to the Pacific Coast and to California for plums. It does not seem a great many years ago when it was not possible for us to raise enough apples. We have been satisfied with picking the native plums, and some are really delicious, and some lose all their astringency with the skin. I am going to leave here a check for \$100 to be deposited with the Farmers' and Mechanics' Savings Bank, and I hope it will not be long before some one will have the right to claim it. (Applause.)

The Chairman: This is a very delightful and inspiring talk Mr. Loring has given us, and we appreciate the spirit in which it was given, and I believe it will have a great deal to do with bringing about the happy day when we shall have a great improvement in hardy plums.

Prof. Sandsten: We have a good example at Madison on the farm of Mr. Marshall. He has a large orchard of native plums, and he has netted as much as three hundred dollars to the acre on native plums. They are sold in the Madison market at forty cents a basket, five to the bushel, when ordinary plums or Michigan plums, which are inferior to the native plums for preserving and canning purposes, have sold for twenty-five cents. We have established a market at Madison, and you could establish a market in Minneapolis and St. Paul.

Prof. Hansen: Just one thing in regard to the Surprise plum. If there is anything in heredity, here is an example. Plant the Surprise plum among other plums; never plant it alone in a block. It is something like the Miner plum so far as that is concerned, it has that trouble of self-sterility and does not bear alone. The further south you plant the Miner plum, the less it will bear unless you mix it up well.

Mr. W. L. Taylor: What would you advise planting?

Prof. Hansen: Any kind that blooms at the same time.

Mr. O. W. Moore: I think the best method of propagating the native plum is to take a few trees of the very best native plums we have. Select for size, color, quality, thinness of skin and as many freestones as possible, and then plant from eight, ten to a dozen of those trees. Isolate them just as much as you possibly can from any other plum groves, get them out alone somewhere, plant them so they can fertilize one another; plant them

twelve to sixteen feet apart, or something along that order, and let those plums fertilize each other, which they will do when they come into bearing. You take the whole crop of those plum trees, not a few pits but save the whole crop of pits, and then plant those pits in a suitable way in suitable ground and give them proper care and culture and raise those pits into bearing, and the chances are that you will have many superior plums. This is the best way that I know, that my experience tells me, to get a good, superior native plum. You bring those seedlings into bearing—and, of course, there will be culls in the best pure bred breed of stock, and that is so with all classes of plants and animals that I have had any experience with—they will often produce culls, and you must expect culls—but there will no doubt be many plums that will be worthy of propagation. If there are not I do not know of any other method by which you can obtain them in the state of Minnesota.

I have tried the Japanese for the last four years, I have worked carefully and given them the best care and culture and the very best attention, and thus far all the plums I have raised during that time have been six plums on one tree, and that is the plum I gave Mr. Gardner, and he calls it the Japanese No. 2. It is a superior plum. It is a perfect freestone, the skin is just as thin as any blue plum I ever saw; the only thing against it is that it is a little undersized. That is all I have obtained in the way of Japanese plums, I have tried to satisfy myself along those lines and have given the matter the best of attention my experience was capable of giving it. So, gentlemen, I think some of us old fellows ought to get a move on ourselves and capture that hundred dollar check. (Applause.)

TO GRASS A TERRACE.—For each square rod to be planted take $\frac{1}{2}$ pound of lawn grass seed and mix it thoroughly with 6 cu. ft. of earth and loam. This should be placed in a tub, and liquid manure, diluted with about two-thirds of water, added and well stirred in, so as to bring the whole to a consistency of mortar. The slope must be cleaned and made perfectly smooth, and then well watered, after which the paste containing the grass seed should be applied with a trowel and made as even and thin as possible. Should it crack from exposure to the air it must be again watered and smoothed up day by day until the grass makes its appearance, which will be in eight to fourteen days; the whole slope will soon be covered with a velvety coat of green. O. J. Farmer.

MAY DAY TREE.—The May Day Tree (*Prunus Maackii*) seems to have been overlooked by our planters. At this writing, May 4th, it is the most beautiful thing I have seen this year, and is now in full flower. The foliage is a bright, light green, and the tree is of rather compact habit. The flowers are borne in grape-like clusters, something like those of the choke cherry, but are larger and much more conspicuous and are produced abundantly. The flowers hold on well, even in hard rains. The tree is open to attacks of black knot, the same as the choke cherry, but this is easily kept in check if cut off soon after it appears. This tree may be grown from seed or by budding on the plum and probably on the choke cherry. It is perfectly hardy.—Prof. Samuel B. Green.

Summer Meeting

OF THE

Minnesota State Horticultural Society,

1906.

The regular summer meeting of the society will be held, as now for long a time, in Armory Hall, State Experiment Station, St. Anthony Park, Minn., on Tuesday, the 26th of June. This date has been selected for the purpose of holding the meeting at the time of the height of the strawberry season in the vicinity of the Twin Cities, which will still give opportunity for the exhibit of late ripening varieties from points south of here and early ripening varieties from points north, from both of which localities, as well as the immediate vicinity of the Twin Cities, we hope for very many contributions to the strawberry exhibit. The usual large premiums for the exhibit of this fruit are again offered.

Exhibits of green currants and gooseberries are also asked for, and premiums offered for them. Every variety exhibited should be carefully labeled so that proper comparisons may be made. A large exhibit of roses and peonies is also desired, and it is hoped the exhibit may not be confined to one or two of the larger growers of these timely flowers. Let each member attending who has flowers, even if of not more than one variety of roses or peonies, etc., bring that one kind to the meeting and thus participate in a practical way in the interest of the exhibit, which will be much augmented by becoming personally connected with it. Please note the change from past years in the method of offering premiums for exhibits of perennial flowers. Each variety may be shown by itself, and separate prizes will be paid therefor. It is expected that this change will increase the interest in this class of exhibits.

There is more of interest than ever at the experiment station to attract the attention of our members and especially along horticultural lines. The new movement in the way of experimentation in plant breeding should be particularly noted. As far as possible the members should plan to be on the grounds early in the day and spend the forenoon in looking over what is being done by the officials who have charge of the work there, a number of whom will be on hand to escort parties about the place.

A basket lunch will be spread in Armory Hall at 12:30 o'clock, which it must be understood is for the members of the society and adult members of their families or accompanying friends, and all who take part in this function are expected to contribute towards it, as this is the only way in which the spread can be prepared. Strawberries will be furnished for the table from those presented for exhibition after the judging is completed. All those taking seats at the tables must be provided with tickets, which can be obtained by members for themselves and accompanying friends from a committee in the hall who will be known by their wearing the society badge. Any present who are not members of the society may become such for the current year by the payment of \$1.00 annual fee to Secretary Latham, or of \$10.00 for a life membership.

The afternoon session will begin at 2 o'clock and end at 3:30. It will be in large measure an impromptu program and to some degree at least connected in the nature of object lessons with the fruits and flowers exhibited at the meeting. A number of the officials connected with the station will talk of the work of their departments, whatever they may have on hand of special interest to horticulture, and most of the departments include something of this nature. Every member and friend is urged to attend this meeting. A lively and helpful time may be expected, nothing dry or somber about the occasion. A question box will be provided for any who would like to take advantage of this method of securing information.

Come early and see it through. The experience of so many years giving us invariably a pleasant day makes us almost ready to insure ideal summer weather for this occasion.

HOW TO REACH THE GROUNDS.

Take the Como-Interurban electric car in either St. Paul or Minneapolis, and get off at Commonwealth Ave., where carriages will be found waiting to carry the visitors to the grounds, one-half mile distant, from 9:30 a. m. to 1:30 p. m.

Do NOT take the Interurban car, but TAKE the "Como-Harriet" car.
A. W. LATHAM, Secretary, CLARENCE WEDGE, President,
207 Kasota Block, Minneapolis. Albert Lea.

PREMIUM LIST,

All exhibits must be entered with the secretary and in place by 11:30 a.m. to be entitled to compete for premiums. No entries can be accepted after this hour.

Exhibitors competing must be members of this society and the growers of the articles exhibited, which must have been grown in Minnesota and be correctly labeled.

Fruits and flowers shown become the property of the association and will be used at the mid-day lunch.

N. B.—At the afternoon session exhibitors, in all classes, may be called upon to talk about the articles exhibited, describing them, giving methods of cultivation, etc., using the articles themselves as object lessons.

ENTRIES.

All probable exhibitors are urged to send to the secretary at once their lists of entries that labels may be prepared beforehand. The large number of entries made at the summer meeting makes it almost impossible to get the clerical work done in time for the judging when the making of entries is put off until the exhibits are brought to the meeting. Please make these entries promptly with the secretary NOW, and if by any unforeseen cause your exhibits should not be shown, no harm is done.

FLOWERS.

Bring out the Flowers.

	1st prem.	2nd prem.	3d prem.
Each named variety of out-door roses, six blooms..\$	.50	\$.25	
Each named variety of peonies, five blooms.....	.50	.25	
Each variety of perennial flowers.....	.50	.25	

STRAWBERRIES.

One quart of each variety shown.

	1st prem.	2nd prem.	3d prem.	4th prem.
Collection of strawberries.....	\$5.00	\$4.00	\$3.00	\$2.00
Each named variety of strawberries....	.75	.50	.25	
Seedling strawberry never having received a premium from this society	3.00	2.00	1.00	

APPLES.

(Not kept in cold storage.)

	1st prem.	2nd prem.
Best plate of any named variety of apples (of average size and in good condition).....	\$1.00	\$.50
Plate of seedling apples.....	2.00	1.00

CURRANTS AND GOOSEBERRIES.

One quart of each variety shown and branch of same with fruit and leaves.

	1st prem.	2nd prem.
Each named variety of currants.....	\$.50	\$.25
Each named variety of gooseberries.....	.50	.25
Seedling currant.....	1.00	.50
Seedling gooseberry.....	1.00	.50

CALIFORNIA POPPIES.—California poppies bloom all summer. They are as easy to grow as weeds. All that is necessary is to sow the seed in ordinary garden soil as early in spring as the ground can be dug, to keep weeded and to thin the plants so they are about ten inches asunder. The plants grow about a foot tall, and have grayish foliage and produce plenty of yellow, orange and white flowers, single and double. For best effects, distinct colors should be planted separately. Seed gathered in late summer and sown where the plants are to remain will give better results than spring sown seeds. A mulch of straw is advisable covering for winter.

KEEPING FARM APPLES.—A damp, cold, humid air is one of the essentials in keeping apples. Ventilation, provided it does not interfere with these conditions, is desirable, but continuous ventilation with a bare cement floor would necessitate a good wetting of floor and walls every twenty-four hours unless the floor was covered with some absorbent material. We cannot manufacture cold, but we can ventilate when we have this condition freely, and when it is warm close all vents. Cement floors are bad for keeping apples because capillarity is cut off. In its absence water should be supplied by artificial means, such as sprinkling or hose, and if the storage room has a few inches of sawdust on the floor to conserve the moisture, all the better. I have thought if Vermorel nozzles could be stationed at convenient points in the room and water under pressure turned on and kept going it would supply humidity very well. Extremes in temperature should be avoided.

Secretary's Corner.

COMPETITION FOR THE NEW PRIZE SEEDLING OFFERS.—A good many applications for apple seed in connection with this seedling contest have come in since the last issue of our monthly. A full report of what has been done in this direction will be made at the summer meeting, as well as what is being done in connection in the work of growing apple and plum seedlings at the experiment station to secure improved varieties here.

WINTER-KILLING OF RASPBERRIES.—Mr. Frank Yahnke, Winona, reports the loss by winter-killing of some of his raspberries. As to the probable cause, he says "I think that the injury to the raspberries in this section was caused by the scant snow we had the first part of the winter when the ground froze dry. Some growers who covered their berries say that those covered were more injured than those uncovered. This makes me think that the ground was so dry when it froze that it injured the plants. Probably the late season had a great deal to do with it."

SOCIETY FOLDERS.—A new edition of five thousand of the society folders, the little pink circular which sets forth the methods and advantages of the society, has just been printed, and there is a good supply now on hand to meet all probable demands. Nurserymen and others who have use for these folders are requested to make application to the secretary for them, and they will be furnished, as usual, free of cost, prepaid. Containing, as they do, the fruit list and the tree and shrub list, they are of much practical value to any interested in Minnesota horticulture and should be widely distributed by the members of the society.

THE LOUDON NOT A GOOD SHIPPING BERRY.—The leaving out by the printer of a little word of three letters, "not," in an article contributed by Henry Haggard, on the "Commercial Raspberry Field," to be found in April, 1906, issue, made him say therein something directly contrary to his purpose. "The Loudon raspberry has not justified the claim made for it as a shipper by the members of this society a few years ago. It is a heavy yielder of good sized fruit, of good flavor and fine for home use, and if it would separate from the stem as soon as the berries color would ship finely, but it will not come off until the berry is overripe and is too soft to ship long distances." This is what Mr. Haggard said about the Loudon.

SUGGESTIONS TO FRUIT EXHIBITORS AT THE STATE FAIR.—The attention of probable exhibitors of fruit at the state fair is called to an article to be found on page 308 of the report of this society for 1905, "Suggestions to Fruit Exhibitors at the Minnesota State Fair," prepared by Sec'y Latham, the result of many years' experience in this department, first as an exhibitor and later as its superintendent. If you are a new exhibitor, by all means study this article with care and make it as far as possible a guide in getting up a fruit exhibit, and even if an old exhibitor some hints may be secured by studying it which may be helpful.

PREMIUMS FOR CANNED PLUMS.—The society desires a number of choice receipts for canning our native Minnesota plums, and to secure them offers the following attractive premiums:

Receipt for canning plums (not "preserves"), with sample pint canned by such receipt, both to become the property of the society, to be exhibited at the next annual meeting of the society, December 4-7, 1906. Give name of variety canned.

Five premiums—\$10.00, \$8.00, \$6.00, \$4.00, \$2.00.

SUMMER MEETING AT THE EXPERIMENT STATION.—Don't forget the regular mid-summer meeting of the society, to be held at the State Experiment Station, St. Anthony Park, Minn., as usual when strawberries are ripe. There may be expected strawberry exhibits from many points within at least one hundred miles of the place of meeting, and as the premium list includes every named variety there ought to be sufficient financial inducement in this to insure a large display. Bring out your fruits and flowers even if you have only a single variety to show and help out the display. Members attending should note that tickets are required for themselves and friends participating in the picnic dinner, for which each member present is expected to contribute liberally in the usual way.

STATE FAIR PREMIUM LIST.—The premium list for the Minnesota State Fair the coming fall is ready for distribution, and if the reader has been an exhibitor at the state fair or would like to be or is in any way interested in what is being done in the way of getting up a display there, he should write at once to Sec'y E. W. Randall, Hamline, Minn., and ask him for a copy. On page 83 of this premium list will be found the list of premiums offered in the horticultural department, which includes fruits and flowers. Not many changes have been made in this list since a year ago, but it will be worth while to look it over carefully to know exactly what is offered, so that the exhibitor may make entries for everything he can show. There will be found a few changes in the list of varieties of apples in both the amateur and professional departments, and the \$75. to be divided pro rata amongst the exhibitors of collections of apples, in both the professional and amateur classes, which was accidentally omitted from the premium list last year, will be found in its proper place again. This amount with an additional first premium of \$10. and a second premium of \$5. makes \$90. to be divided among the exhibitors of collections in each of these classes, which ought to draw out many fine displays. The pro rata premium for collections of seedling apples has been increased from \$30. to \$50., which fact should be noted by those who can exhibit in this class. A few changes have also been made in the floral department, the principal one of which is in providing that amateur cut flowers shall be exhibited on Monday, also lot 202 of the professional cut flowers, while the remainder of the professional flower exhibit, designs, baskets, tables, etc., will be put in place on Thursday. Tables occupied by the cut flower exhibit on Monday will thus be renewed and filled with fresh flowers on Thursday, in this way maintaining a fresh display throughout. Exhibitors in this department are requested to correspond with Sec'y Latham, who has charge of it again this year as usual.

GENERAL JACQUEMINOT.

THE MINNESOTA HORTICULTURIST.

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No. 7

ROSE PROPAGATION IN THE MINNESOTA NURSERY.

JOHN NORDINE, LAKE CITY.

In all its details, this is one of the largest problems with which we have to deal and is consequently a large subject to treat fully within the limits of a short paper. That the rose is the "queen of flowers" is an opinion so widely held that it is not necessary to enlarge upon its qualities or value, and that it is one of the most difficult features in the propagation list of a northern nursery is likewise a fact to which I think all our fellow nurserymen in this state will agree. The different kinds of treatment required by the different classes of this great group of flowering plants makes their successful propagation a complete study in itself.

Hence, in order to treat my topic in as brief a manner as possible, I will merely describe the several processes by which rose plants are grown commercially without considering their application to individual species or varieties. To do this would be altogether beyond the limits of an afternoon discussion.

One of the most common methods of growing roses, and the one longest in use, is the one known as layering. In order to multiply from layers, it is necessary to have a strong plant with which to operate. These stool plants, as they are commonly called, should be grown in rows ten feet apart, with the plants two and one-half feet apart in the row. In the spring these plants should be pruned back so as to leave only the strongest shoots, and the shoots should be cut back to four or five buds. After this is done, the soil should have a liberal dressing of well rotted manure. A thorough cultivation should then be kept up until the first of July. This will allow the wood to ripen somewhat before the layering is done, which should be about the middle of July.

LAYERING.

Propagation by layering is one of the simplest processes, as the stool plant furnishes nourishment to the young plant until it establishes its own root system. It is a ready means of mul-

tipling all hard wooded plants which do not start well from cuttings. Layering is done by first removing about ten inches of the leaves on the stem, beginning at a point about one foot from the end. Next, with a sharp knife make a slit one and one-half inches long, beginning immediately back of the bud, on the under side of the stem. Then, while the operator still holds the stem in the left hand he should open up a long furrow about two inches deep with a steel trowel. Next, carefully bring the stem into this furrow,

BUDDING ROSES

Plate 1.—Showing the bark on the stock cut and loosened up, and the bud held in the hand ready to slip into place under the bark.

bending the end upward as sharply as possible without breaking the wood. Then cover up with the soil and firm it down thoroughly, leaving the top of the stem which bears the leaves in as upright a position as possible. Root development will soon commence and by fall this layer should become a well rooted plant. It should then receive a mulching to protect the roots, which will naturally be near the surface of the soil. In the spring this new plant should be cut loose from the parent stem and planted out in rows three and a half feet apart, and the plants twelve inches apart in the row. They should be thoroughly cultivated and sprayed several times during the summer to keep them free from the various

fungous diseases and insect pests which attack the young rose. In the fall these plants should be of a marketable size.

CUTTINGS.

With this method either a greenhouse or propagation frame is necessary, as success depends upon a complete command over moisture and temperature. A frame for this purpose is usually made from boards twelve to fifteen inches wide. It should be construct-

BUDDING ROSES.

Plate 2—The bud held in position, just ready to be slipped down into place.

ed six feet wide and as long as desired, a crossbar being placed every three feet as support to the sash. The best location for the frame is a place well protected from the hot afternoon sun. First, dig out the soil to a depth of twelve to fourteen inches and wide enough to fit the frame. Fill this trench with fresh horse manure that still contains some heat. Do not tramp it in but pack it as firmly as you can with the fork. On top of this construct the floor from any cheap inch boards, having it rest on pieces of two by six, which is done to raise it away from the bed of manure. In nailing on the boards leave a little space between them for drainage. Then place the frame on this floor, and you are ready to fill in the sand. This should be coarse and clean and taken from some place where it is sure to be free from vegetable matter.

For rose cuttings it is best to have the sand three or four inches deep. Pack the sand down firmly with a brick or smoothing board. Then water the whole bed thoroughly, and it is ready to receive the cuttings.

In making rose cuttings, the first thing to consider is the texture of the age of the wood. A soft, or succulent, cutting does not take root readily, and if it does succeed in doing this it is liable to

BUDDING ROSES.

Plate 3—The bud slipped down into place ready for tying.

“damp off” and produce a weak plant. Wood that is too old is slow to root, and the operator must be able to select a happy medium between these two extremes. The cutting should always be taken from flowering shoots and at the time when the rose bud on this shoot is about half open. Cuttings of all varieties which root freely, like General Jacq. or Victor Verdier, can be made with one eye only; that is by making the cut between each bud. With varieties of a slower tendency, two or three eyes must be left to insure a start. As a rule, part of the leaf should be removed before the cutting is planted. This is not essential, but it lessens the tendency to wilt.

The cuttings are set in rows—using a short board sharpened to an edge to make the row—and about two or three inches apart.

They should then be thoroughly watered in. From this time they must be very carefully watched. Special attention is paid to ventilation, shade and watering until the roots have well started, which usually takes from fifteen to eighteen days. After this, the plants are placed in two inch pots and put into another frame without bottom heat.

In the commercial nurseries of the East and South, most of the rose propagation is done in the months of January, February and March. The wood is grown close together in a high temperature, so as to produce slender shoots. The cuttings are taken very short and rooted in tightly closed frames which are placed over the benches in the greenhouse. In this manner the roots strike much more quickly, and the process is consequently much cheaper. In our experience, however, this method does not produce as strong and vigorous plants as the one previously described above.

GRAFTING.

There seems to be a difference of opinion as to the comparative value of grafting as a method of rose propagation, and each grower must settle the question for himself. We have found the best stock for grafting to be the *rosa canina*, or Manetti stock. These should be potted in the fall, in three-inch pots, and then place in a cold frame or cellar, where they will take root in the soil. When well established in the pot, they are ready for the grafting, which is usually done in the month of March. Any of the common methods of grafting may be used. The scions should never be of a greater diameter than the stock, otherwise they will not make a good union. As fast as the grafts are inserted, they should be securely tied with raffia. As soon as the grafting is done, it is necessary that the plants should be placed and kept in an even and suitable temperature, such as can be obtained in a greenhouse or hotbed. A brisk bottom heat will quicken the action of the roots and assist in a more perfect union of the graft. After three or four weeks of this treatment, the plants should be shifted to a four-inch pot, and by the 25th of May they should be ready to plant in the field. By this time they ought to be from twelve to sixteen inches high, and the planting should be done so as to place the union about two inches below the surface of the ground. This will induce the plant to throw out roots on the scion itself, and at the same time it places the stock so far down into the ground that the chances for it to sprout are reduced. By fall these plants will be three to four feet high.

BUDDING.

This is the same method as employed by many nurseries in the growing of apple trees, cherry trees, etc., and is really the simplest of all the processes. In this country there is but one style of budding in general use. This is known as "shield bud system," the name coming from the shield-like shape of the portion of the bark which is removed with the bud. The bud is cut from a young

BUDDING ROSES.

Plate 4—The tie going on, being completed below the bud and now being wound on above it.

shoot of the present season's growth, then inserted under the bark of the root-stalk and tied with raffia.

The Manetti stock is also the best for budding. This is usually imported, but it can be grown with good results in the cold frame from long root cuttings. Before planting, the stock should have all the buds cut out except one or two at the top. This is done to prevent too many sprouts. The stock should be planted in the early spring and well cultivated. By the 20th of July they should be about the size of an ordinary lead pencil. The best time for budding is between the 20th of July and the 1st of August, as at this period the bark of nearly all varieties peels with greater facility, making it easier to insert the bud properly. The raffia should be

left on two or three weeks before cutting. In nearly all varieties the bud remains dormant during winter.

In early spring the stock should be cut off immediately over the bud, so that when the growth begins the whole flow of sap will be thrown into the bud and force its growth as rapidly as possible. As soon as it is about three inches long, this growth should be pinched off, which will induce it to throw out lateral branches. It is necessary to support the plants with stakes, as without this the young growth will very soon blow to pieces. Thorough cultivation should be maintained. Do not forget the spray, especially in the late summer and early fall, or the so-called black spot will cause all the foliage to drop before the plant is well matured for winter.

The Chairman: I would like to ask Mr. Nordine whether he has had any experience in the way of budding roses in the spring and cutting them back as soon as the buds are grown fast?

Mr. Nordine: No, I have not. I understand in the east they are using that system of propagation for peaches, but we have never tried it with roses at our place.

The Chairman: I have seen roses imported from England that I am positive were budded in the spring with the terminal bud. It made a beautiful stock during the brief season they had to put them in.

Mr. Kellogg: Does the Madame Plantier readily layer?

Mr. Nordine: Yes, it does; we grow it entirely in layers.

GOATS AS MOWING MACHINES—A flock of Angora goats was put on a rocky hillside that it was desired to have cleared and gotten into grass, says a writer in *Country Life in America*. It was such a tangle of brush and briars that it was with difficulty one could make a way through it. The goats actually ate their way in until it was penetrated with paths in all directions. After the leaves within reach were eaten they would stand on their hind feet, with their fore-feet in the branches, and so eat the leaves higher up, or, if the brush was not too large, would throw their weight against and bend it to the ground where others of the flock would help strip it of its foliage. The leaves would come out again only to be eaten off, then sprouts would come from the roots to share the same fate, until at the end of the second summer everything in the shape of a bush not over six feet tall, except the pines and laurel, was completely killed, and white clover was beginning to appear. These goats, with their long, curly, white fleeces, attracted more attention, probably, than anything else on the place; but, as can be imagined, they had to be well fenced in, for they would run over a stone wall like dogs.

THE FRUIT GROWER'S COLD STORAGE PLANT.

MADISON COOPER, WATERTOWN, N. Y.

The best results in cold storing fruit are obtained when the fruit is stored as soon as it is removed from the tree. Elaborate experiments by the United States Department of Agriculture have demonstrated this beyond a doubt. Very little fruit is stored on the farm where produced except in common or cellar storage, because no facilities are at hand for the proper storing of the product. Many individual fruit-growers, gardeners and dairymen are greatly in need of cold storage facilities and could make a handsome profit above cost of operating such storage. Where the magnitude of the crop does not warrant any single fruit grower to put up his own plant, a co-operative plant could be built which would give all of the benefits of home cold storage and would require a comparatively small investment for each grower.

In connection with a co-operative plant it would be practicable to work up a trade direct with the retailers of near-by cities or towns, and by suitable organization and fairly close proximity to customers goods might be sold direct to the consumer. This, of course, is another story and is, no doubt, touched on by other papers which will be read before this society.

Under favorable conditions it has been demonstrated that fruit may be stored in the country at a cost of 10 cents to 15 cents per barrel for the season. This will give the very best cold storage care and will turn out a much finer quality of fruit than will result from storage in frost proof fruit houses or cellars. The common city charge for storage is 40 cents to 50 cents per barrel, and fair profit can therefore be made on storage cost by storing at home.

A cold storage room is not simply a room with ice in it. In the past this has been the common idea of cold storage, but at present something else besides a moderately low temperature must be furnished if satisfactory results are to be had. A cold storage room must make the control of temperature, humidity and purity of air possible. To do this the room must be cooled by some means which are under the control of the operator. Cooling a room directly by ice will only produce a temperature of 38°F. to 45°F. under average warm weather conditions. The humidity, or moisture, in the air is excessive, and the lower the temperature the greater the humidity. A temperature of 38°F. and upwards will not give satisfactory results for long period storage. The best storage houses now maintain a temperature of 30°F. for the storage of apples, and at the same time the air must be reasonably dry. This is sufficient reason why any of the old style direct ice cooling sys-

tems have not given satisfaction and in a great majority of cases have been abandoned.

A refrigerating machine will produce good results if it is carefully handled and operated under favorable conditions and run continuously, or nearly so, during the twenty-four hours of the day. A refrigerating machine operated on the ammonia system (which is the common machine system in use) is expensive to install, complicated to operate and, in the smaller machines especially, very liable to break down or get out of order. The ammonia system requires considerable skillful attention and a large amount of power to operate it. There are very few, if any, successful small machines on the market, although their makers claim them to be practically automatic in their operation and to require very little attention. It may be stated in a general way that a refrigerating machine is practically out of the question for the storage of fruit in country locations, owing to high first cost and difficulty and expense of operation.

The poor results obtainable with direct ice cooling and the difficulty and expense of operating an ammonia machine led to the invention of the "Gravity Brine System." This is a system of iron piping through which circulates chloride of calcium brine. There are two sets of pipe coils connected together by suitable supply and return mains. One set of coils is located in a tank and surrounded by ice and salt. The second set is located at a lower level in the room or space to be cooled. As the brine in the coils in the tank is cooled by contact with the ice and salt it becomes heavier and circulates down into the coils in the storage room, where it displaces the comparatively warm brine, which rises into the tank coils and is cooled in turn. This circulation will, of course, continue as long as the supply of ice and salt is maintained in the tank. Any temperature down to 10° above zero may be produced and maintained with this system, but 30°F. is as low as fruit-growers are interested in. Owing to the steadiness or balance which the brine circulation gives, much more uniform temperatures may be had with the "Gravity Brine System" than with a refrigerating machine.

The advantages of the "Gravity Brine System" over direct ice cooling are a control of temperature and comparatively dry air in the storage room, its advantages over a refrigerating machine is a better control of temperature at a much lower cost and an absolute surety against break-down.

It has been stated in some of the horticultural papers that a cold storage plant could be built at a cost of one dollar per barrel of capacity. A first class house cannot be built at any such cost,

especially in a comparatively small plant. The cost will be from two dollars to four dollars per barrel, depending on type of building, capacity, etc. It is of course possible to build a cheap, poorly insulated structure cooled by direct ice at a cost of one dollar per barrel of capacity, but in the construction of a cold storage plant it is not advisable to look too much at first cost. The results to be obtained is the most important point to be considered. After this may be considered expense of operation, and after that the first cost of plant.

The writer of this paper has designed upwards of fifty different cold storage installations, and he desires to state emphatically that first class results cannot be obtained in a cheaply constructed house. Unless fruit-growers are willing to make a considerable investment in a first class plant it is far better that they ship their goods to the large city storage houses, which at present is the general way of handling. In doing this, however, the grower loses control of his fruit and sacrifices a portion of the profit which legitimately belongs to him.

There are in the city of Minneapolis seven different plants equipped with the "Gravity Brine System." Your secretary is familiar with the results to be obtained with same, as he has stored fruit in them for a number of years, and I presume some of the members here present have also had occasion to test the results. A small plant will produce as good results as a large one, and under the careful personal attention of the owner have often produced better results. My advice to all fruit growers is to put in a plant if they have a sufficient crop and can afford the necessary investment, or to combine with others to put up a co-operative or neighborhood plant. Build first class or not at all, or you will probably regret it.

SHADE TREES AND THEIR CARE.—There seems to be a tendency to replace cottonwood, box elder and willow with more valuable and desirable sorts. The elm, ash, basswood, oak, maple, evergreen and nut trees are worthy of more extensive use. Soft maple and elm grow equally as fast and both make the finest of shade or roadside trees. The soft maple, if pruned occasionally while young, will not break down any quicker than other varieties. Both maple and basswood should be protected from sunscald for a few years after being planted, by wrapping the trunks with burlap or hay rope. Street trees should be planted 40 or 50 feet apart. The idea that shade trees need no care whatever is entirely erroneous. Just as the garden requires weeding and periodical hoeing, the shade tree needs pruning and other attention. Give your trees as much care as you would if they were yielding \$100 each annually, and you will be surprised at the result.

**BREEDING HARDY STRAWBERRIES AND
RASPBERRIES**

PROF. N. E. HANSEN, BROOKINGS, SOUTH DAKOTA.

(Refer back to article on page 193.)

I believe I will begin with Mr. Underwood's statement and try to reconcile the points of difference between Mr. Underwood and Mr. Cook. But the fact is there is no difference between the two. Look at the matter from a historical basis. Whence came our strawberries? From South America. If you will look back over the history of the subject you will find that American strawberries date back about to the year 1834, when Hovey Seedling appeared. Mr. Hovey had a strawberry from South America, very large, apt to be hollow, rather flavorless, of a high color, better to look at than to eat, and he also had the real wild berry of Massachusetts, and he got a number of seedlings with wild blood in them.

Prof. N. E. Hansen and staff of assistants in plant breeding work, May, 1906. "You see it takes myself and good helpers to handle seedlings by the hundred thousand."

The modern strawberry came originally from South America, and there now is little trace of native eastern blood apparent in them, and also little of the western type. Now that we know its origin, we have been barking on the wrong track. We have no hardiness to begin with; it is mainly South American blood.

Now the question arises, what is hardiness? That is a question that has not yet been solved. It is something inherent in the nature of the plant and has been there thousands of years. Some of the discussion on fruit seedlings is something like a kitten chasing its

tail. We are at cross purposes. We do not get at the real physiological basis of heredity. As to hardiness, it is the same in any plant now that it was ten thousand years back—I do not know how much further back than that, but that far anyway. I find root-killing of fruit trees and small fruits. Every mile you go northwest you find it. Where we have a drouth in the fall, we have those cases

Part of three acres of strawberry seedlings at South Dakota Exp. Station. Prof. N. B. Hansen in foreground.

Mr. Underwood speaks of. It is a lack of hardiness in the plant itself and also a lack of moisture in the fall. Lack of moisture in the fall does not hurt our wild berries. Get that idea out of your head promptly. You get no root-killing of the wild strawberry, and it simply means we have to go back to the wild species; and instead of being contented with the work done seventy years ago in Massachusetts, we need to do the work ourselves. Hardiness is something inherent in the nature of the plant. It cannot be put there by selection alone, understand that. Why? Because it is the nature of the thing. The Zulu would freeze to death where the Eskimo would not. What is the difference? They are both human. What inherent hardiness is, no one knows. The fuchsia will not

stand the same amount of cold that the gooseberry will. The apple trees that come to us from the mild climate of France will not grow as far north as will the Russian apples. The apple of Russia came from a climate that gives us a much colder temperature than that of southern France.

I believe that is enough on that point. It is the same way with the raspberry. Where did we get our tame raspberry? The first settlers from Europe brought both raspberry and strawberry. The pilgrim fathers and others brought over choice raspberries from England, France, Germany, all milder sections than ours; they thought they were good enough. These failed to endure our cli-

Raspberry breeding at South Dakota Exp. Station. The field before selections were made.

mate. The same thing happened to the grape; so they looked in the woods and found the wild ones. These were crossed with the European grapes, and they soon found that the less tender foreign blood there was in these fruits the better it was for them. The native pure blood, eastern raspberries form the basis of our present cultivated raspberries in the west. We are a lazy lot of fellows not to raise more seedlings all these years. We did not get deep enough into the problem. This breeding work is now progressing rapidly. The native types of these fruits are hardy enough here, but neither the European nor New England type is adapted to our conditions. I came back from a visit to Luther Burbank this fall and stopped at Winnipeg. I saw some wild plums there and bought a big pailful from the Indians. That is all there is to it. We have to get at the fundamental physiological basis of it all and bear in mind that hardiness is something we cannot put into the plant by selec-

tion. If you had taken the raspberry of southern France, which is of a very fine quality, and started to adapt it to Minnesota ten thousand years ago, you might have accomplished something in the way of securing hardiness, but I don't believe this society is willing to undertake that thing now. (Laughter.)

Now a word as to what has been done in strawberries. I have been working along that line for years and raised 8,000 seedlings. I gathered strawberries together from North and South Dakota, Manitoba and Assinaboia, and after testing a large number of the standard sorts I found they were all badly weakened after a hard winter, but those pure wild ones were perfectly hardy. They were great

Raspberry breeding at South Dakota Exp. Station. The field after selections were made.

plant makers; if anything, were too full of vitality and made too many plants. After gathering this material together from wild ones, I imported some everbearing strawberries from France. Tests were made with those eight thousand seedlings and all were plowed under except about 225. That is "infant mortality" for you. But those that remained increased and have stood several winters without protection. I will not protect any plant; I draw the line at giving any protection to outdoor plants. I find as a result that I fear that I can count the ideal ones out of the eight thousand on the fingers of one hand; I had over three acres of these forty or fifty fair to good sorts. I sent out two sorts last year, and now wish that I had sent out only one. For a farmer's berry pistillates are not what we want. That knocks out over half of the good seedlings, and I have only a few perfect flowered varieties. Some are promising as commercial berries. There are good pistil-

late varieties, but for the farmer we need one where he can plant without considering the needs of pollination. That is the ideal for the farmer's berry, and I think we have such a plant in the South Dakota No. 1. We need also a variety reasonably free from rust. Among the thousands of seedlings I found some that did not get the rust, or at least not enough to injure them. Perhaps rust will not come on a berry if it is perfectly hardy. A weakened animal is more liable to be attacked by disease than a healthy one. If our plants were perfectly hardy, we would have less trouble with rust.

I don't believe in "the squirt gun." Of course spraying is essential and must be done, but we should have varieties which will not need continual spraying. We have been too slow in raising seedlings of all sorts. We have been content with what nature has given us by accident. This is like depending on a lottery. All these years we should have been raising seedlings by the million instead of by the dozen. I do not recommend any one to raise seedlings unless they know pretty well what they are doing and are prepared for disappointments. It is like the picture of the long bunch of hay tied in front of the horse in harness. I do not want to give people the idea that they are to expect financial returns from raising seedlings. We should do as President Wedge said, make it a labor of love.

After trying many of the standard raspberries, I discarded them all, because they killed out if not covered. I do not like to see anything injured, but I will not lay down a raspberry. If the plants cannot stand the first winter and the succeeding winters without being laid down they must be plowed under. The only way to get anything of value out of the eastern sorts, and those from France, England and Germany, is to cross them with the pure native stock. In order to get a good strain of pure bred wild seedlings we must take them for the first two, three, four or five generations under cultivation, and from such select the best specimens, and keep on with them the same as we do with seed corn until we get our plants large enough in fruit. You cannot get them in any other way. This is as sure as the fact that the sun rises and sets each day. Our wild sorts need considerable modification to be acceptable. This year I traveled over two thousand miles in Assinaboia and North and South Dakota to get stock. I have some from Manitoba and some from the Red River Valley, and I think they are hardier than those of the Black Hills type. There is one raspberry I have I expect to name "Sunbeam." It is a hybrid of Shaffer's Colossal with a wild raspberry from Cavalier county in North Dakota. It is of good color and flavor. It is the only survivor of several

thousand seedlings. I have not yet sent it out but may offer a few for spring planting. Some of my other seedlings of the thousands coming on may be better. It is good enough to eat as it is, and it has proven hardy without any protection. After you reduce a plantation from thousands down to one plant you will know something of the effort needed.

Mr. Elliot: I want to confirm what Prof. Hansen has said. I visited Brookings this fall and spent a day with him in looking over his experimental work. He pointed to this row of raspberries, the Sunbeam, to which he referred, and he made this statement: "This is a row of raspberries I am undecided what to do with, whether to send them out or carry them along for further experiment." I have not seen in our cultivated varieties any finer show of canes than I did there. They were magnificent. I think Prof. Hansen is working along the right lines and doing more in this way than any other man I know of in the United States with the possible exception of Luther Burbank. (Applause.)

Mr. Underwood: I think probably Mr. Elliot would have stated the case better if he had said that he is doing more than any man for Minnesota and the Northwest.

Mr. Elliot: I will accept that suggestion.

Mr. Underwood: Mr. Burbank is not working for Minnesota, he is doing very little for our benefit, he does not understand our conditions, but Prof. Hansen does, and he is a man to whom we may look for help. He has not told us what winter-killing is, and he has not told us what being hardy is, and that was the question under discussion. He says we must have something that is hardy. What is hardiness? What is winter-killing? When you tell me what that is and define it, and tell me what the principles are of winter-killing, then I will tell you how to go to work to overcome it. Prof. Hansen is going to breed hardiness in the plant. I do not object to that, and I hope the time will come when he will breed apples and strawberries and raspberries that will be so hardy that there will be no winter-killing, so they will be adapted to the conditions they are in. That is hardiness. A plant is adapted to South America because it is adapted to the conditions of South America, but it might not be hardy in Minnesota or Dakota, because it is not adapted to the conditions there. What are the conditions, and how can we meet them? So far as I am able to understand it, after following up the matter for forty years very thoroughly, I cannot see anything yet that you gentlemen have done or said that convinces me or can convince me—although I am open to conviction—that it is not caused by a lack of moisture. If you have got anything else bring it out. I want to know what it is. All that you ever say of a plant is that it is hardy or it is not hardy, and if it is not hardy you say the plant is injured or destroyed by winter-killing, but you do not tell what it is; you do not say what hardiness is or what made the plant tender. If it is not hardy it must be tender. How is it tender? What is the cause underlying the condition of being tender? If it is not lack of moisture of the root or top or both, then what is it? I think when you get down to the bottom of the thing you will find it is a lack of moisture, and

when you have bred a raspberry or a strawberry that is hardy like our wild ones, you will find that it is simply drouth-resisting; it can live on a dry soil and under drouthy conditions where another could not. Prof. Hansen says rust will not form on a healthy and strong plant. If it is in a weakened condition, it is susceptible to rust. That is exactly what has been brought out here. The plants were weakened by the roots being hurt on account of lack of moisture. A drouth came on in the fall, there was a dry condition of the soil, the strawberry plants were calling for a good deal of moisture; they had heavy foliage, large tops and large leaves, and they were exhausting the moisture in the soil right in the row where they were. They cannot reach way out several feet to obtain moisture like a tree. I do not know how far the roots of a strawberry plant can reach out, but they do not go as far as the roots of a tree. They are in a matted row, practically in a hill, and they absorb all the moisture in that immediate vicinity. The ground freezes up in that condition, the freezing weather continues to expel the moisture from the ground until that plant is left there without anything to drink. It is simply choked to death. That is the way the matter appears to me. It is simply a lack of moisture, and if it is not that get up and tell me what it is. Do not say it is lack of hardiness, do not say it is winter-killing; that does not mean anything to me. I want to know what it is. I want to learn whether it is this, that or something else.

In regard to improving our raspberries, that is all right for you to go ahead and breed raspberries that will not need laying down. If you succeed in developing such a raspberry, I will honor you for it. But, at the same time, until you get raspberries that will not need laying down we had better keep on laying them down, those of us who are growing raspberries. One man said he laid down four hundred acres last year with one team. He lays them down as fast as his team can walk, and if you can have it done as easily as that you had better keep on. Until Prof. Hansen gets a raspberry that does not need laying down, you had better keep on doing as you are doing now, laying them down and giving them protection in the winter.

Prof. Hansen: I heartily agree with Mr. Underwood that we should lay down our raspberries and irrigate our strawberries when necessary. I believe winter-killing is largely lack of moisture, but it is not altogether that. No matter how much moisture you give the fuchsia or the geranium, you could not carry it through the winter as you do the strawberry, because it is not hardy enough. The water will not do it all. Mr. Hess, the man I spoke of, irrigates his strawberries with excellent results, and that shows that water is very necessary. It is the same concerning our apples, etc. No one can tell what hardiness is. We only know that with the same temperature and moisture some plants will stand the winter and some will not. It is in the condition of the plant itself. In the same way hardiness may mean resistance to heat. You take the Siberian crab, and it is a failure in the south because it is not adapted to the conditions it finds there.

Mr. Elliot: That is the condition of the Americana plum in Texas.

Prof. Hansen: That is a good illustration. At the American Pomological Society meeting last September, Prof. Munson of Denison, Texas, said the Americana plums winter-kill in Texas. Hardiness means the adaptation of a plant to the conditions where it is attempted to grow it, and it has reference not only to cold but to heat also. In regard to the hardiness of an apple, the Iowa horticultural society and the experiment station spent a considerable sum of money in trying to find out what hardiness was in an apple. First, a series of chemical analyses of apple tree twigs was made. Then the wood was examined under a high power microscope to determine the difference in cell structure between tender and hardy varieties. Then they thought it might be a difference in the thickness and palisade structure of the leaves. But nothing tangible was determined in the way of deciding what constitutes hardiness. I do not believe it is in the structure. There may be a correlation between the plant and the leaf, but whether or not hardiness is something apparent in the structure of the plant I do not believe has ever been determined.

Mr. Thos. E. Cashman: There have been some very valuable points brought out in this discussion. Professor Hansen is doing a great and noble work in bringing out these new varieties, and I hope some day he may meet the goal of his ambition and find a strawberry plant that does not rust and will not need covering, and will pull through the winter under any condition. But until he and the other gentlemen who are working along this line accomplish their purpose, we shall have to meet the conditions as we find them. We have got to do the best we can with what we have at hand. In order to do this we must plant vigorous stock, and when our plants are planted we must take care of them. We must give them thorough cultivation, and thorough cultivation will assist in retaining the moisture. And with thorough cultivation must go spraying. We have to spray the varieties we are propagating. If we do not our plants will become weakened before winter sets in, and they are more likely to winter-kill than if they go into winter quarters in first class condition. If we have not sufficient moisture we must supply that moisture. I believe, as Mr. Underwood says, we must have moisture; it is very essential to the proper growing of all varieties of plants, and one of the ways of furnishing and retaining moisture in the soil is by cultivation, thorough cultivation, and if that does not suffice we must irrigate. Then we must protect that moisture in another way, and that is by mulching. We may have plenty of moisture when winter sets in, but if we have a freezing and thawing winter it may kill the strawberry plants all the same if they are not protected. If conditions are right, if we have plenty of moisture, good vigorous plants, covered properly, handled and properly sprayed, ninety-nine times out of a hundred we will get a good crop of strawberries; but we must be vigilant, and we must keep in mind and look after all the various details, and if we do that we shall get along nicely with what we have at hand.

Trial Stations.

MIDSUMMER REPORTS.

CENTRAL TRIAL STATION, ST. ANTHONY PARK.

SAMUEL B. GREEN, SUPT.

While the past winter, as regards temperature, was rather mild, yet there was more damage from winter injury to herbaceous plants than for a number of years and less injury to many woody kinds. For instance, an ornamental shrub which we know as *Rhamnus Alpinum*, which has usually killed to the snow line and often to the ground, this spring started from its terminal bud. On the other hand, strawberry plants were considerably injured, even when protected by heavy mulch. I think this injury to herbaceous plants largely due to the forming of a crust of ice on the surface of the ground, which remained for some time.

Our apple trees are in good condition, and the Duchess and a few other kinds promise heavy crops, though the crops on most of the varieties will be light. Some varieties of plums will produce heavy crops, while the Surprise seems to be somewhat injured, and its crop is very light.

I have received two samples of the growth of the Surprise plum which are swollen up and distorted. I think this is plainly due to the effects of the fungus that commonly causes plum pockets (*Exoascus deformans*), but in this case it has attacked the new growth as in the peach, where it forms similar swellings, that are known as peach leaf curl.

Our strawberry beds afford a good illustration of the relative hardiness of varieties. The following table showing the condition of strawberries at the Central Experiment Station in spring of 1906 gives some idea of these results:

Station Seedlings.

No. 1.....	poor.
No. 3.....	excellent.
No. 4.....	good.
No. 5.....	good.
No. 6.....	excellent.
No. 7.....	excellent.
No. 8.....	poor.
No. 9.....	excellent.
No. 10.....	excellent.
No. 11.....	good.
No. 12.....	excellent.

No. 13.....	excellent.
No. 14.....	excellent.
No. 18.....	good.

Named Varieties.

Maximus	good.
Howell	poor.
Emperor	excellent.
Jesse	excellent.
Auto	excellent.
Thompson 501	good.
Crescent	fair.
Mrs. M. Hanna	killed.
Thompson 503	good.
Thompson 500	weak.
M. Hanna	weak.
Thompson 203	weak.
Bennett	good.
Thompson 201.....	good.
Excelsior	weak.
Gibson	weak.
New York	excellent.
Morgan	good.
Lyon	excellent.
Pride of Cumberland.....	good.
Glen Mary	killed.
Nicol No. 6.....	good.
Livingstone	good.
Sample	weak.
Granville	good.
Millets 2672	weak.
Johnson's Early	weak.
Margaret	killed.
Gaudy Bell	killed.
Bederwood	partly winter killed.
Shepherd	good.
Pocomoke	good.
Bride's Pride	killed.
Splendid	good.
Ruby	good.
Aroma	killed.
Brunette	killed.
Dunlap	good.
Alaska	excellent.
Thompson's Earliest	excellent.
St. Anthony Pandu, seedling.....	excellent.

The soil with us was very much baked and in poor shape to work this spring, owing probably to the heavy and continuous rainfall which we have had.

PLANT BREEDING.

We have made special effort this spring to take up work along the line of plant breeding. This has consisted in part of a considerable amount of crossing work between the American and Japanese varieties of plums, which has been done at the home of Mr. Nils Anderson, near Lake City, where both the Japanese and American sorts are doing well.

Four hundred Hibernial apple trees have been set out, to be used in top-working seedlings, and between these we have planted 5,000 plum seedlings, selected from the best hardy varieties.

The seed from seventeen barrels of Malinda apples—purchased by the state horticultural society—grown in the tops of Duchess trees, and which are supposed to be crosses between those two varieties, were sown in frames at the experiment station and came up very evenly and were making a rapid growth, but during the cold,

wet weather quite a percentage was lost by damping off. However, there will probably be 4,000 or 5,000 seedlings as the result of this work.

Several hundred crosses have been made between the Senator Dunlap strawberry and our wild sorts, and a variety that we obtained last from Alaska which has wonderfully healthy foliage and great hardiness. Among the hundreds of seedling strawberries

which we have grown we have not found any of special value, but our seedlings numbers thirteen and fourteen have proven so exceptionally hardy, and withal of such good quality, that we have decided to distribute one or both of them for trial as soon as we can get a sufficient stock of plants to do so.

Several hundred crosses have been made between the Ancient Briton blackberry and the dewberry-blackberry hybrids, sent out by Mr. N. K. Fluke a number of years ago. Our blackberries came through the past winter in good condition and are now white with bloom.

Six hundred potato seedlings have been raised from seed of the best kinds, and about fifty varieties of potatoes have been planted out. Our aim is to obtain potatoes of greater resistance to disease than any now grown. We find that potato pollen is often deficient in vitality, and we wish to make a study this summer of the best way of procuring potato seed.

The land for many years used for the small fruits of the horticultural division will now be turned over to the agricultural division, and in lieu thereof the horticultural division will have about ten acres of land that has recently been purchased by the University.

At present there is not sufficient room at University Farm for the plant breeding work we should like to undertake. It is hoped that the next legislature can be induced to make a suitable appropriation for this purpose.

EXCELSIOR TRIAL STATION.

A. B. LYMAN, SUPT.

The fruit crop on young trees will be a short one this season, while the trees in the older orchards that did not bear last year are well loaded with fruit. Trees came through the winter in good condition, there being no root injury and but little damage to tops; some N. W. Greening and Anisim that overbore last season look rather sick but may come out all right yet with favorable conditions.

There was a loss among young nursery trees that we had not met with before, one and two year olds, especially one year olds, cracked at the crown, and the bark was loose. The tops above the injury were alive, and many of them have sent up new shoots above the graft and will make good trees. This injury was at the crown, the roots and trunk below the surface are alive. We had a few hundred trees in parallel rows of the same varieties that were grown from buds set in the fall of 1904 on baccata stocks

that did not show any of this injury. I did not notice any of this loss among the Duchess and Patten's Greening, etc., yet a great many of the Okabena and Wealthy were injured. I do not know that this shows any lack of hardiness, as there were other surprises among plants supposed to be ironclad, among which I could mention the native red cedar as killing here and there. Young evergreens in nursery came through perfectly, as they were covered with snow, yet many fine plantation of evergreen trees set out all through this section number dead trees among the living. We noticed arbor vitae hedges that had been set for years at Shakopee, also white pine six to ten feet high, that were all dead. We think that the unusually warm weather in the latter part of Feb., in connection with the ice formation later, had something to do with this winter-killing.

The strawberry crop will be a light one, as the plants are more or less root-killed, even though we have the most favorable weather. But few realize the extent of injury among their strawberries. They are badly injured nearly every winter, and if the weather is unfavorable at ripening time the crop is suddenly cut off. This loss is not confined to neglected plantations by any means, as fields that were well covered are often badly injured.

I set out a few hundred plants that we purchased from Prof. Hansen, of South Dakota, known as the South Dakota No. 1, a cross between the tame and wild strawberry, hoping to get something that is better adapted to our conditions. It seems to us that this work that they are doing at Brookings in creating plants and fruit that will stand northern conditions by adding hardiness ought to receive every encouragement.

GLENCOE TRIAL STATION.

A. H. REED, SUPT.

The prospect for an abundant fruit crop in McLeod and adjoining countries is not flattering for the season of 1906, as in 1905.

Apple trees produced but few blossoms compared with last season, and at this writing, June 16th, I can find apples upon but few varieties, notably the Hibernial and Patten's Greening. No sign of blight as yet on apple trees this season, while last year they commenced blighting early in June.

Plums blossomed freely, but only natives are well stocked with fruit. The Wolf and Surprise are producing but little fruit. The Abundance and German prune, that I planted in the spring of 1905, nearly every one winter-killed. I have struck them off my list as unworthy of further trial.

Cherries. Our ten Early Richmond and ten English Morellos, three years old when set last season, nearly every one lived and survived the winter without extra care. My Compass Cherry I am much pleased with. Trees always bear second year after transplanting and bear profusely every year. Trees set last spring, but three feet high, blossomed full and are loaded with fruit. They are splendid for canning.

Strawberries bid fair to yield abundantly, although not ripe for market, while foreign berries have been shipped in and sold for seven cents per quart.

Pears. Twenty five pear trees, of the Bartlett and Seckel varieties, set in the spring of 1905, have shown much thrift and wintered finely without extra care. Three quince trees set at the same time have lived but made slow growth.

Grapes. Five hundred Concord grapes and fifty Agawam, transplanted last season, nearly every one made good growth and are doing well.

Extreme cold and wet April and May makes garden products very backward.

JEFFERS TRIAL STATION.

DEWAIN COOK, SUPT.

June 11th, 1906. Fruit trees came through the past winter with but very little injury from the cold. The apple blight has not as yet in any form put in an appearance, while the apple foliage is healthier and more free from apple scab than for several seasons.

The apple crop will be light, as the bloom was scant. No variety can be said to be bearing heavily, although individual trees of the Wealthy, Duchess and some others are bearing a good crop.

The plum crop will also be light. Cold and wet weather prevailed when the trees were in bloom. Several varieties of Japanese hybrids are bearing full. We are well pleased so far with this class of plums. We notice an occasional small hole in the leaves of our native plums, which indicates that the shot hole fungus is still with us.

Red raspberries where sheltered wintered fairly well (we do not cover), and we expect a good crop of this fruit. Where planted in a fully exposed locality, we have no variety that shows up as well as the Turner.

Strawberries in this neighborhood where properly covered will bear a good crop, but unfortunately we covered with nothing but brush, depending upon the snow to do the rest, and as we had an open winter the plants mostly winter-killed. But experimentally this

brush covering was a success, for in one patch so covered with brush which contained the following varieties, Sen Dunlap, Crescent, Splendid, Bederwood and Warfield, only the Bederwood makes a fair showing now, and it is evidently the hardiest strawberry grown by me.

This last spring we set scions of many new and promising varieties, plums and apples, also sowed a package of apple seeds sent by Mr. Broom, of Mankato.

The season has been a little too wet up to this time for general farming, but the rains came mostly at night, therefore we have had our usual amount of sunshine.

A few of the early strawberries have begun to turn red, and picking for market will begin in about one week.

MONTEVIDEO TRIAL STATION.

LYCURGUS R. MOYER, SUPT.

Last winter, while not very severe, was a trying one to nearly all kinds of vegetation. A thaw in early March left the ground covered with water and slush, to be succeeded by continued cold weather. It was during this cold spell that the greatest damage was done, and the damage was especially noticeable on flat, level land. In such locations, such plants as "Shasta daisy," "Golden Glow," *Gaillardia aristata*, *Dianthus plumarius* and *Vinca minor* were killed outright, while *Dicentra spectabilis*, *Polygonum Sieboldii*, German iris, and even paeonies, suffered severe injury. Roses came through in bad condition, while the *Physocarpus opulifolius* and *Spiraea van Houttii* were both much injured. *Tamarix amurensis* was not entirely killed on bluff sides and will recover.

The prospects at present indicate only a moderate crop of apples and a rather small crop of plums. There will be a fair crop of gooseberries and currants, but raspberries were badly killed where not laid down and covered. Surprise plum killed back almost to the ground. The Gideon apple tree gave up the contest, and Peerless was much injured. The Peerless apple trees will not bear this year, but Oldenburg and Blushed Calville promise large crops. One tree of Hibernial appears to have been root-killed. Virginia crab promises a fair crop, but Pride of Minneapolis is not bearing this year. About all of the cherry trees have disappeared.

The twelve apples trees, sent out by Prof. Green, budded on *Pyrus baccata*, have not been uniformly successful. Four out of the twelve died during the first summer, and three of these were trees set unusually deep. It is possible that we will come to believe

with the late Mr. Harris that crab roots will not answer for our apple trees. They seem to be deficient in vigor, and the trees grafted on them appear to fail in much the same way as did our American plums when budded on *Prunus pumila*.

Pinus Montana at Montevideo Trial station

The wild rose bushes have long been infested with rose leaf rust (*Phragmidium subcorticium*). This disease is especially destructive to the prairie wild rose (*Rosa Arkansana*) where attempts have been made to cultivate it. Last summer this rust attacked *Rosa rugosa* very severely, greatly injuring the bushes. Prof. Freeman recommends burning the diseased part of the plant and spraying with Bordeaux or ammoniacal copper carbonate.

Among the new plants set out at the station this spring, are: *Viburnum tomentosum*, *Viburnum Pekinensis*, *Crataegus rotundifolia*, *Euonymus Maackii*, and *Ceanothus Virginiana*—from Prof. Green; and *Aconitum autumnale*, *Adonis vernalis*, *Alyssum saxatile compactum*, *Anemone nemorosa*, *Aquilegia Siberica*, *Campanula punctata*, *Centaurea Carolinana*, *Delphinium grandiflorum*, *Digitalis purpurea*, *Gaillardia aristata*, *Hibiscus*, *Mostheutos*, *Iris christata*, *Iris flavescens*, *Iris Siberica*, *Lilium Canadense*, *Lilium tigrinum splendens*, *Lupinus perennis*, *Lychnis diocia rosea*, *Papaver nudicaule*, *Papaver orientale*, *Saponaria ocymoides*—from H. S. Horsford.

The thanks of the station are due to Hon. A. J. Volstead and to the National Botanical Garden for a large supply of rare seeds. Many of these seedlings are doing finely.

OWATONNA TRIAL STATION.

THOS. E. CASHMAN, SUPT,

June 15th, 1906. The past winter, while not severe, came near being an old time root-killing winter. Had the February thaw continued a week longer, trees that were not well mulched or banked with snow would have been severely injured or killed outright; as it is, I find many of the shallow planted trees injured, and some of them dead. At the Owatonna Experiment Station, but very little damage was done. A few of the shallow planted trees were slightly injured, and some of them dead. It might be well to state that the majority of trees at the experiment station were never transplanted but are growing from the original seedlings, which accounts somewhat for the shallowness of the planting.

The following is the report from the twelve trees budded on *Pyrus baccata* roots, received from the Minnesota horticultural society last season and planted at the Owatonna Experiment Station.

Tree No. 1. Charlamof planted deep; has grown twelve inches this year and is in good condition at the present time.

Tree No. 2. Charlamof planted shallow; has grown six inches and is in a fair condition.

Tree No. 3. Patten's Greening, planted deep; has grown eight inches, in fair condition.

Tree No. 4. Patten's Greening, planted shallow; root-killed last winter and replaced with Peter budded on Hiberna.

Tree No. 5. Patten's Greening, planted shallow; grown eight inches this year and is in fair condition.

Tree No. 6. Duchess, planted deep; grown fourteen inches; in good condition.

Tree No. 7. Duchess, planted shallow; grown ten inches, in fair condition.

Tree No. 8. Hiberna, planted deep; grown fourteen inches, in fair condition.

Tree No. 9. Hiberna, planted shallow; grown twelve inches,

Tree No. 10. Hiberna, planted shallow and blighted to death last year. Replaced this year with Peter budded on Hiberna.

Tree No. 11. Wealthy, planted deep; grown ten inches, fair condition.

Tree No. 12. Wealthy, planted shallow; grown fourteen inches, in good condition.

Will say that the ones we term "deep planted trees" were set twenty inches deep, and those termed "shallow planted" were set fourteen inches deep. All the deep planted trees have made the best progress so far, with the exception of the Wealthy.

Last winter has taught us that we must either plant our trees very deep or mulch them each winter with some coarse litter. My experience has been that it is not the hard freezing that hurts our apple roots but rather the deep thawing of the ground around the roots and hard freezing weather afterwards. I have never yet seen apple roots injured when a little mulch was placed around them or where the ground staid frozen around the tree all winter.

We did considerable top-grafting this season, having worked over nearly all the Duchess, Hibernial, Virginia crab and Dartt's Hybrid growing at the station with the best seedlings originated there, such as Phoenix No. 50, Wealthy No. 6, Seed M., etc.: also with the Black Ben Davis, Salome, Grimes' Golden, Jonathan, Northern Spy and Winesap. Our object in top-grafting the last named onto our hardy trees is to determine what can be done with those tender varieties, that bear delicious fruit, when grafted onto a hardy stock. Up to date, the top-grafting has been a success, as nearly all scions are growing nicely.

In the ground that we tile-drained and prepared last season, we planted a number of varieties originated at the station, such as Phoenix No. 50 and Banana apple budded on *Pyrus baccata* and a large number of Wealthy seedlings.

This will be an off year for apples in this section, and the majority of trees will not yield over one-quarter of a crop. We have sprayed all the trees at the experiment station twice this season. The first time with Bordeaux mixture, before the trees leaved out, and the second time with Bordeaux and Paris green, after the blossoms had fallen off. We will spray again in about six weeks. This makes the station free from all insect pests, and what fruit we do grow will not be ill-shaped or worm eaten.

PLEASANT MOUNDS TRIAL STATION.

J. S. PARKS, SUPT.

June 9, 1906. This is strawberry time and this kind of fruit should receive first place, as apples hold first place all the rest of the year. The strawberry crop promises to be from fair to good all through this section. Some claim the outlook to be more promising than ever before. The plants wintered in fine condition. The spring was favorable, about the proper amount of rain came in due time, and all went well until the frost of May 7th, that nipped a few localities and will shorten the crop a very little.

The first berries to ripen, as far as heard from in this vicinity, were had June 2nd and at this writing, June 9th, ripe berries are becoming quite general.

The show for raspberries, grapes, currants, gooseberries, and blackberries—although the latter are just now in blossom—bids fair to be above the average. The apple crop is not a bountiful one—in about half the orchards the crop of blossoms was very light while others had a liberal amount, and all blossoms set fruit much better than usual. At this station some varieties, like the Walbridge, Transcendent, Snow, etc., will have very little fruit, while Duchess, Wolf River, Whitney, most of the crabs and 100 other varieties will be loaded down with fruit—with no indications of any scab or insect pests. Plums will be about half a crop from present indications. Some plum pocket and blight, the first seen in several years.

WEST CONCORD TRIAL STATION.

FRED COWLES, SUPT.

June 14, 1906. During the past winter we had but a light snowfall, but the fall rains made the soil in good condition, so that trees and shrubs generally wintered well, although some things suffered. In raspberries Shaffer's Colossal although covered killed. Columbian that were not covered killed back quite badly. Older stood well with no protection. The Yankee apple tree killed back some. These were trees set one year, and most of last season's growth killed. Other varieties stood well.

We sow oats around the young apple trees. This insures the roots, and unless snow comes before the ground freezes the mice do no damage. Rabbits did no damage the past winter.

Young arbor vitae killed back badly. This is something we have never seen before in this vicinity. Our hedge set six years came out well, with not any blight or killing back, while some set one and three years ago blighted quite badly. But as a rule everything came out in good condition, and the wet spring has been favorable for all newly set plants, which started well and are making a fine growth.

Apples did not blossom generally. A few old orchards are full, but there will be few apples in this vicinity. Plums blossomed full but did not set much fruit.

Strawberries are set full of fruit and promise a fine crop but will be late again this year. Raspberries and blackberries are also full of bloom.

Gooseberries and currants are loaded with fine fruit. The worms came early but a dust spray of Paris green killed them before any damage was done. All flowering shrubs are doing well.

All early flowering kinds were full of bloom, spirea, honeysuckle, snowball, flowering plum, etc.

The iris is full of bloom. Pansies are just coming out, and roses are beginning to blossom.

ANNUAL MEETING, 1906, WESTERN HORTICULTURAL SOCIETY, WINNIPEG, MAN., FEB. 15, 1906.

PROF. WM. ROBERTSON, CROOKSTON, DELEGATE.

I have heard it jestingly said that a person lying across the line with his feet in Manitoba and his head in Minnesota would have a very cool head and very warm feet, if the thermometer be allowed to tell the temperature on the Minnesota side and the Canadian land agent for the Manitoba side. My visit to the Western Horticultural Society meeting in February explained the matter to me. It is the warmth of the Canadian heart that keeps up the temperature of Winnipeg. They use coal in winter, but the thing that captures the Minnesotan when he crosses the boundary line on the north is the warmth of his welcome.

Can fruit be grown in Manitoba? I answer that it will take more than a few degrees of temperature, more or less, to outdo the boundless enthusiasm and confidence of the members of the Western Horticultural Society. Can fruit be grown in northern Minnesota? For answer look at the accompanying illustration of an actual apple-harvest scene at the home of A. P. Stevenson, six miles north of Winnipeg; then ask yourself if there is any room for the pessimist in Minnesota, or even on the face of the earth. I keep this picture on my desk here at Crookston, and when anybody comes into my office and tells me that we are too far north to grow apples I do not argue with him, I just hand him the picture. Facts are stronger than argument.

I am afraid, Mr. Secretary, that I became so imbued with the one idea of enthusiasm at the meeting of the Winnipeg Society that it knocked everything else out of my head, and I forgot to take note of details. In fact, I was so captured that I have sold my farm, strawberries and all, in the southern part of Minnesota, four miles from the Iowa line, and have bought another in Roseau Co., just far enough from the north boundary so I can catch the inspiration of the Manitoban as it blows across the line. Have also put out at the State Farm here at Crookston this spring, for trial, a few each of thirteen varieties of apples, and have started a new strawberry bed, five rows, 100 plants each, of Splendid, Bederwood, Warfield, Senator Dunlap and Lovett. They are looking

well, although the Northern Pacific Ry. did give them a ride of eight days to get them here.

The program of the Western Horticultural Society meeting included many short papers on practical subjects, with intermediate

Apple harvest, fall 1905, at home of A. P. Stevenson, six miles north of Winnipeg, Man.

lively discussion, a feature that has for many years been a characteristic one in the Minnesota State Horticultural Society.

The necessity for using northern-grown stock was strongly emphasized.

Among the fruits recommended for planting which may be of interest to northern Minnesota people, are:

Strawberries: Bederwood, Senator Dunlap, Wm. Belt, Clyde, Lovett, Enhance.

Apples: Hibernial, Duchess, Patten's Greening, Charlemof, Ainsette, Blushed Calville.

Plums: Cheney, Aitkin, Surprise.

Crabs: Transcendent, Hyslop, Whitney No. 20, Virginia, Early Strawberry.

Summer Meeting,

1906,

MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SEC'Y.

The unbroken record of a pleasant day for the summer meeting of our society now maintained so many years was nearly fractured on Wednesday, June 26th, when the regular summer gathering was held in Armory Hall, at the State Experiment Station. Showers the night before and a steady rainfall in the morning gave promise of an unpleasant day, but as the hours advanced the clouds thinned out, and by noon we were enjoying the usual beautiful weather for this gathering. The threatening morning had some effect, undoubtedly, on the attendance, but by actual count there were fully three hundred who sat down to the lunch tables, and many undoubtedly were there who did not participate in that function. At the afternoon session, when the topics of the day were discussed, the gathering was an unusually large one, of which probably more than one-half were ladies, making a very pleasant occasion of it.

With one exception, Judge Moyer, of Montevideo, all the members of the executive board were present, President Wedge being able to be with us and presiding at the meeting. The faculty at the experiment station, especially Prof. Green, who had direct charge of the entertainment, and his first assistant, Mr. LeRoy Cady, took all pains to make the gathering a pleasant one. Tables for the exhibit of flowers were arranged across the east end of Armory Hall and half way down either side, and tables set for the accommodation of two hundred fifty guests occupied the rest of the hall. The fruit exhibit was placed in an adjoining room provided with a sufficiently large number of tables for the purpose. It being an unfortunate season for strawberries, the exhibit was a comparatively light one, as was anticipated, but there was enough of this fruit so that after having been judged it was distributed about the tables, and each guest was supplied with an abundance. There was also a large display of currants and gooseberries. A few varieties of apples were shown, including a number not entered from the Perkins' seedling orchard, at Red Wing, exhibited by Wyman Elliot. One of the most interesting exhibits there was a collection of branches and

sprays from the private experiment station of Mr. J. R. Cummins, of Eden Prairie, including many unusual things, like chestnut, beech, English walnut, Japanese maple, calycanthus, etc., many of which are not considered hardy for growing in this region. There was a very fine display of peonies by John Hawkins, of Minneapolis, and a large number of others added more or less to the exhibit of flowers, which was pronounced by one of the speakers the best ever made at our summer meeting. Considering the lateness of the date of holding the meeting, which had been put off to accommodate the strawberry growers—and incidentally resulted in cutting out some of the usual large exhibitors—the display was certainly an extraordinary one. The premium list which follows tells more in detail the story of the various exhibits, most of the articles shown receiving some kind of an award.

A display of six of the newer sorts of strawberries was made by Geo. J. Kellogg, of Lake Mills, Wis., and attracted attention from those interested in this fruit. They were not shown in competition.

The climax of the gathering is the dinner hour, and the tables loaded with wholesome and appetizing food, contributed by the members of the society, and beautifully decorated with flowers, with the eager faces about them, made a most beautiful picture.

The regular session of this society was called at about two-thirty o'clock. No formal program had been prepared, but a number were called upon to speak on timely topics, something in this order:

Prof. S. B. Green described in a general way the work now being done at the experiment station in the effort to breed new fruits of greater value to Minnesota than those now in general use. Long keeping apples of high quality are needed, grapes of good quality that will live over winter without burying, small fruits that will winter without protection,—and there is a reasonable hope that the crossing work and seedling growing being done will give us ultimately the results we are needing. Much of what Prof. Green referred to in his talk will be found somewhat in detail in his report of the Central Trial Station published in this number.

J. M. Underwood, of Lake City, being invited, talked of the new auxiliary, "The Plant Breeders' Auxiliary," advising and urging the members to take hold and get to work practically along the lines of seedling growing. He spoke of the purpose of the organization to assist in intelligent and united work along this line and the opportunities the organization would give for keeping records and establishing pedigrees as the work of breeding new fruits develops. He also spoke of the large display of flowers and suggest-

ed that the members should more largely grow flowers for exhibit at the meeting until Armory Hall was filled with them and we might find it necessary to occupy the new coliseum at the state fair grounds.

Prof. F. L. Washburn talked a short time about "Scales and other things," mostly about other things. What he had to say about scales was not especially discouraging, as he told us that the lady bug was getting busy amongst them and was apparently able to take care of them without the assistance of the usual spray. If found necessary to spray for these scales a good strong soapsuds emulsion would probably do the business. He exhibited a very handsome chart of birds which it was a pleasure to have an opportunity to see.

Mr. W. A. Peterson, an assistant in Prof. Green's office at the station, was called out to talk of the work in crossing plums which he has been doing for the station in the plum orchard of Nils Anderson, at Lake City, Minn. He has made there, this spring, a large number of crosses between the Americana plum and the Japanese and domestic plums. It is expected that practically the whole crop of plums at Mr. Anderson's place will be saved, both those that have grown from these hand crosses and also the balance, amongst which there should be many natural crosses, and from this seed seedling trees will be grown. The station has hopes of securing some valuable new and hardy sorts from this work. Mr. Peterson spoke also of crossing the wild Alaskan strawberries with various natives—work he has done at the station—in hopes of securing some hardy strawberries of good quality which would winter without covering.

Prof. A. Boss spoke briefly of "Plant breeding for hardiness." With the large experience Prof. Boss has had at the station in breeding new varieties of grain plants, in which hardiness is equally as essential as with fruits, he is very competent to speak on this subject. He referred in his talk to a number of ways of breeding hardiness in plants. 1st. The natural way of selecting sorts that do not winter-kill and are prolific bearers, and planting the seed from them. 2nd. Gathering specimens of fruit that differ from the normal, saving and planting the seed from them. 3d. Securing varieties from other sections or countries and testing their hardiness, using them later for crossing purposes or to grow seedlings from.

As there was no shorthand reporter at our meeting, the language of Prof. Boss and other speakers referred to above cannot be exactly quoted. In Prof. Boss' case we expect to secure a paper

from him on this subject for the next annual meeting, which will more fully set forth his thought in the matter.

Mr. Cummin exhibited many of the articles spoken of in referring to his exhibit and answered questions about them. Then the "question box" yielded up its contents and the session was over.

The meeting adjourned at four-thirty o'clock, the flowers on display having been distributed amongst the ladies in the audience. Each one carried away a large bouquet of roses, peonies or some of the infinite varieties of perennials that went to make up the exhibit.

The summer gathering is indeed a gala day, and all the members who find it practicable to do so should make a point of attending this meeting. There is much to be learned in contact with the growers of fruits and flowers, and the joy of the occasion, meeting with congenial spirits under such pleasant circumstances, is something long to be remembered.

The beautiful appearance of the grounds at the experiment station ought to be spoken of, and the annual opportunity to go over them and see the changes and improvements in the growth of the shrubbery, the development of plants and changes in the garden, orchard and field, and the infinite variety in the work being done there, adds greatly to the interest of the occasion.

AWARD OF PREMIUMS, SUMMER MEETING, 1906.

ROSES.

Maiden Blush	S. R. Spates, Wayzata	....Second	....\$0.25
Yellow Harrison .....	"	....First	....50
Mdme Plantier	M. C. Bunnell, Newport.	....First	....50
Mdme Gabriel Luizet ...	Rose Hill Nursery, Minneapolis.	....First	....50
Paul Neyron .....	"	....First	....50
Mdme Plantier .....	"	....First	....50
Baroness Rothschild ...	"	....First	....50
Glory of Mosses .....	"	....First	....50
Magna Charta .....	"	....Second	....25
Prairie Queen .....	"	....First	....50
Rosa Rugosa .....	"	....First	....50
Crested Moss .....	"	....First	....50
Anna De Diesbach .....	"	....First	....50
Multiflora	J. P. Brown, Eureka.	....Second	....25
Mdme Cecil Bruner .....	"	....First	....50
John Keynes .....	"	....First	....50
Mdme Caroline Testout..	"	....Second	....25
Victor Verdier .....	"	....First	....50
Duke of Edenburg .....	"	....First	....50
Crested Moss .....	"	....Second	....25
Magna Charta .....	"	....Second	....25
Baroness Rothschild ....	"	....Second	....25
Margaret Dickson .....	"	....First	....50
Marshall P. Wilder .....	"	....First	....50
White Rambler .....	"	....First	....50
Rosa Rugosa Pink .....	"	....Second	....25
Chapeau d' Napoleon ...	"	....First	....50
Alfred Colomb .....	"	....First	....50
Baron Pevort .....	"	....Second	....25
Clemance Reaux .....	"	....First	....50
Earl of Dufferin .....	"	....First	....50
Ulrich Bruner .....	"	....Second	....25

Seven Sisters .....	"	....First .....	.50
Crimson Globe .....	"	....First .....	.50
Perpetual Red Moss .....	"	....First .....	.50
Salet .....	"	....First .....	.50
Baby Rambler .....	"	....First .....	.50
Princess Adelaide	S. R. Spates, Wayzata.	....First .....	.50
Maiden Blush	Thos. Redpath, Wayzata.	....First .....	.50
Gen. Jacqueminot	Mrs. D. W. C. Ruff, Bald Eagle Lake.	....First .....	.50
Baron de Bonstetin .....	"	....First .....	.50
Paul Neyron .....	"	....Second .....	.25

E. NAGEL, MINNEAPOLIS
Judge.

PEONIES.

Lady Alice	S. R. Spates, Wayzata.	....First .....	.50
Pink (Sweet Scented) ..	"	....Second .....	.25
Rubra Triumphans	D. F. Akin, Farmington,	....Second .....	.25
L'Esperance	Rose Hill Nursery, Minneapolis.	....First .....	.50
Rubens .....	"	....First .....	.50
Crysanthemeflora .....	"	....First .....	.50
Victor Tricolor .....	"	....Second .....	.25
Mdme Vilmoren .....	"	....Second .....	.25
Rosea Superbissima .....	"	....First .....	.50
Rosea Elegans .....	"	....Second .....	.25
Duc de Cazes .....	"	....First .....	.50
Duchess d'Orleans .....	"	....First .....	.50
Alexandria .....	"	....Second .....	.25
Modeste Guerin .....	"	....Second .....	.25
Antoine Porteau .....	"	....Second .....	.25
Queen Perfection .....	"	....Second .....	.25
Achilles .....	"	....Second .....	.25
Reines des Roses .....	"	....Second .....	.25
Hamel .....	"	....First .....	.50
Princess Mathilda .....	"	....Second .....	.25
Washington .....	"	....Second .....	.25
Festiva Maxima .....	"	....Second .....	.25
Mdme Carpentier .....	"	....First .....	.50
Rubra Triumphans .....	"	....First .....	.50
Auguste Mieller .....	"	....Second .....	.25
Duke of Wellington ....	"	....First .....	.50
Tricolor Grandiflora ....	"	....Second .....	.25
Plenissima Rosea Superba	"	....Second .....	.25
Eblayisante .....	"	....Second .....	.25
Monsieur Durufle .....	"	....Second .....	.25
Antomerensis .....	"	....Second .....	.25
Decaise .....	"	....Second .....	.25
Purpurea Superba .....	"	....Second .....	.25
Beaute Francaise .....	"	....Second .....	.25
Victor Paquet .....	"	....Second .....	.25
Perfection Tricolor .....	"	....Second .....	.25
Delachi .....	"	....First .....	.50
Agida .....	"	....First .....	.50
Cytherea .....	"	....First .....	.50
Victoria .....	"	....First .....	.50
Maxima .....	"	....Second .....	.25
Rosea Magna .....	"	....Second .....	.25
Formosa .....	"	....Second .....	.25
Festiva Alba .....	"	....Second .....	.25
Faust .....	"	....Second .....	.25
Louis Van Houtli .....	"	....Second .....	.25
Pottsi .....	"	....Second .....	.25
Edulis Superba .....	"	....Second .....	.25
Queen Victoria .....	"	....Second .....	.25
Bicolor .....	"	....First .....	.50
Grandiflora Rubra .....	"	....First .....	.50
Anemon Flora	S. R. Spates, Wayzata.	....First .....	.50
Lady Alice	Thos. Redpath, Wayzata.	....Second .....	.25
Anemon Flora .....	"	....Second .....	.25
Louis Van Houtli	C. Wedge, Albert Lea.	....First .....	.50
Grandiflora Rubra	B. T. Hoyt, Hamline.	....Second .....	.25
Grandiflora Alba .....	"	....First .....	.50
Festiva Maxima	Mrs. D. W. C. Ruff, Bald Eagle Lake.	....First .....	.50

J. M. UNDERWOOD, Lake City.
J. P. ANDREWS, Faribault.
Judges.

PERENNIALS.

Buttercups	S. R. Spates, Wayzata	....First	.....	.50
Angels' Breath .....	"	....First	.....	.50
Summer Heliotrope, or Valerian	D. F. Akin, Farmington.	....First	.....	.50
Sweet William	Mrs. D. W. C. Ruff, Bald Eagle Lake	....First	.....	.50
Digitalis .....	"	....First	.....	.50
Canterbury Bells .....	"	....First	.....	.50
Heuchera .....	"	....First	.....	.50
Pyrethrum .....	"	....First	.....	.50
Gaillardia .....	"	....First	.....	.50
Daisies .....	"	....First	.....	.50
Columbine .....	"	....First	.....	.50
Iceland Poppy .....	"	....First	.....	.50
Valerian .....	"	....First	.....	.50
Myosotis .....	"	....First	.....	.50
Phlox	W. H. Smith, Farmington.	....First	.....	.50
Achillea, The Pearl .....	"	....First	.....	.50
Pinks .....	"	....First	.....	.50
Elegans Lily	Rose Hill Nursery, Minneapolis.	....First	.....	.50
Iris .....	"	....First	.....	.50
Sweet William	J. P. Brown, Eureka.	....Second	.....	.25
Aquilegas .....	"	....Second	.....	.25
Lily Tigerium Flora Plena	"	....First	.....	.50
Larkspur	B. T. Hoyt, Hamline.	....First	.....	.50
Iris	The Wilcox Co., White Bear Lk.	....Second	.....	.25
Forget-me-not	Mrs. F. H. Gibbs, St. Anth. Pk.	....Second	.....	.25
Achillea, The Pearl .....	"	....First	.....	.50
English Daisy .....	"	....First	.....	.50
Pyrethrum .....	"	....First	.....	.50

A. BRACKETT, Excelsior.

Judge.

STRAWBERRIES

Stahlen	J. P. Brown, Eureka.	....First	.....	.75
Lucas .....	"	....First	.....	.75
Louis Hobach .....	"	....First	.....	.75
Parson's Beauty .....	"	....First	.....	.75
Prof. Fisher .....	"	....First	.....	.75
Seedling No. 6. ....	"	....Third	.....	1.00
Challenge	S. R. Spates, Wayzata.	....First	.....	.75
Bederwood	J. P. Brown, Eureka.	....Third	.....	.25
Minuteman .....	"	....First	.....	.75
Pride of Cumberland ....	"	....First	.....	.75
Crescent .....	"	....Second	.....	.50
Pocomoke .....	"	....First	.....	.75
Splendid	A. O. Hawkins, Excelsior.	....Third	.....	.25
Sample .....	"	....First	.....	.75
Enhance .....	"	....First	.....	.75
Lucas	The Wilcox Co., White Bear Lk.	....Second	.....	.50
Sen. Dunlap	B. T. Hoyt, Hamline.	....Third	.....	.25
Sample	J. P. Johanson, Excelsior.	....Second	.....	.50
Clyde .....	"	....First	.....	.75
Klondike .....	"	....First	.....	.75
Downing's Pride .....	"	....First	.....	.75
Mrs. Hanna .....	"	....First	.....	.75
Tenn. Prolific .....	"	....First	.....	.75
Sen. Dunlap	A. Brackett, Excelsior.	....Second	.....	.50
Clyde .....	"	....Third	.....	.25
Sample	H. W. Shuman, Excelsior.	....Third	.....	.25
Sen. Dunlap .....	"	....First	.....	.75
Collection	Thos. Redpath, Wayzata.	....First	.....	5.00
Bederwood .....	"	....First	.....	.75
Seedling .....	"	....Second	.....	2.00
Seedling .....	"	....First	.....	3.00
Kitty Rice	S. R. Spates, Wayzata.	....First	.....	.75
Uncle Jim .....	"	....Second	.....	.50
Splendid .....	"	....First	.....	.75
Corsican .....	"	....First	.....	.75
Bederwood	Geo. W. Strand, Taylor's Falls.	....Second	.....	.50
Clyde .....	"	....Second	.....	.50
Haverland .....	"	....First	.....	.75
Gandy .....	"	....First	.....	.75
August Luther .....	"	....First	.....	.75
Marie .....	"	....First	.....	.75
Aroma .....	"	....First	.....	.75
Warfield .....	"	....First	.....	.75
Splendid .....	"	....Second	.....	.50
Crescent .....	"	....First	.....	.75
Brandywine .....	"	....First	.....	.75
Bismarck .....	"	....First	.....	.75

Uncle Jim .....	"	....First .....	.75
Kansas .....	"	....First .....	.50
Tenn. Prolific .....	"	....Second .....	.50
Excelsior	J. P. Brown, Eureka.	....First .....	.75
Enhance .....	"	....Second .....	.50
Glen Mary .....	"	....First .....	.75

FRANK YAHNKE, Winona,
J. P. ANDREWS, Faribault,
Judges.

APPLES

Malinda	Thos. Redpath, Wayzata.	....First	1.00
Seedling	Mrs. M. A. Knowles, Excelsior.	....First	2.00
Seedling	D. F. Akin, Farmington.	....Second	1.00

WYMAN ELLIOT, Minneapolis.
Judge.

CURRANTS.

Victoria	Thos. Redpath, Wayzata.	....Second .....	.25
Pomona .....	"	....First .....	.50
Red Cross	S. R. Spates, Wayzata.	....First .....	.50
London Market .....	"	....First .....	.50
Stewart Seedling .....	"	....Second .....	.25
Fay .....	"	....First .....	.50
Empress White .....	"	....First .....	.50
Emperor Red .....	"	....First .....	.50
Ivory White .....	"	....First .....	.50
Prince Albert	Alfred O. Hawkins, Excelsior.	....First .....	.50
Pomona .....	"	....Second .....	.25
Lee's Prolific .....	"	....First .....	.50
Black Champion .....	"	....First .....	.50
London Market .....	"	....Second .....	.25
Red Cross .....	"	....Second .....	.25
Wilder .....	"	....Second .....	.25
North Star .....	"	....Second .....	.25
Victoria .....	"	....First .....	.50
Long Bunch Holland .....	"	....First .....	.50
Red Dutch .....	"	....First .....	.50
Stewart's Seedling .....	"	....First .....	.50
Versailles .....	"	....First .....	.50
Fay's Prolific .....	"	....Second .....	.25
Wilder	S. R. Spates, Wayzata.	....First .....	.50
Red Dutch	Thos. Redpath, Wayzata.	....Second .....	.25
White Dutch .....	"	....Second .....	.25
Fay's Prolific .....	"	....First .....	.50
White Dutch	A. O. Hawkins, Excelsior.	....First .....	.50
White Grape .....	"	....Second .....	.25
White Grape	Mrs. D. W. C. Ruff, Bald Eagle Lake.	....First .....	.50
Perfection	B. T. Hoyt, Hamline.	....First .....	.50

GEO. W. STRAND, Taylors Falls.
Judge.

GOOSEBERRIES

Carrie	Thos. Redpath, Excelsior.	....First .....	.50
Minnesota Thornless .....	"	....First .....	.50
Pearl	S. R. Spates, Wayzata.	....Second .....	.25
Red Jacket .....	"	....First .....	.50
Chatauqua	Alfred O. Hawkins, Excelsior.	....First .....	.50
Mountain Cluster .....	"	....First .....	.50
Pearl .....	"	....First .....	.50
Josselyn	A. O. Hawkins, Excelsior.	....First .....	.50
Houghton .....	"	....First .....	.50
Carrie	S. R. Spates, Wayzata.	....Second .....	.25
Downing	Mrs. D. W. C. Ruff, Bald Eagle Lake.	....First .....	.50
Houghton	B. T. Hoyt, Hamline.	....Second .....	.25

GEO. W. STRAND, Taylors Falls.

Secretary's Corner.

SECRETARY'S OFFICE CLOSED.—From about July 10th to August 1st this office will be closed, on account of the absence of the secretary.

DUCHESS AS A STOCK.—"Edwin R. Heisze reports that he grafted an old Duchess with Ben Davis some years ago and these grafts have been bearing for some years, extra fine apples," so says Edson Gaylord, of Nora Springs, Ia.

STRAWBERRIES THAT DON'T WINTER-KILL.—"My crossed strawberries are O. K. with no mulching. I hear from several of your Excelsior growers of damage to their strawberries." So writes Prof. N. E. Hansen, under date of May 19th. Has he found the strawberry of good quality that will stand the winter without protection?

THE WEALTHY IN BRITISH COLUMBIA.—A communication from the secretary of the British Columbia Fruit Growers' Association, says "You will be interested to know that a Minnesota apple, the Wealthy, is one of the most profitable apples we grow. We have a very widely diversified climate as well as soil, but the Wealthy grows everywhere."

FRUIT IN IOWA.—The June summary of the Iowa fruit growers shows apples 71 per cent, American plums 67 per cent, and the general average of all kinds of fruit 68 per cent. As near as we can judge, from the reports coming into this office, this estimate is not very far from the crop in Minnesota, with perhaps a little decrease in the estimate for apples.

SUMMER MEETING OF THE WISCONSIN HORTICULTURAL SOCIETY.—The secretary of the Wisconsin society is announcing the regular summer meeting of that association at Baraboo, on Aug. 29th, for a single day's session, the general subject of the meeting pertaining to ornamental horticulture. Liberal premiums for native and cultivated flowers in bloom will be offered.

SOMETHING NURSERYMEN MUST NOT DO.—The writer has recently received a letter from a Minnesota nurseryman, on whose letterhead is the following:

"CERTIFICATE OF INSPECTION.

This is to certify that the stock at the nursery and premises of..... of....., Minnesota, has been carefully examined in compliance with law, and that it is free from injurious insects and diseases.

Year 1906.

(Signed) F. L. WASHBURN."

A nurseryman who has changed the wording of the inspection certificate and uses it thus changed on his letterhead is, unknowingly probably, breaking the law, for he has the inspector's name signed to something which he never said. No certificate has been issued which is good for the year 1906. The certificate referred to expires on July 24th, 1906, unless revoked. I am quite sure that the nurseryman in question did not knowingly desire to misrepresent or to render himself liable. At the same time, it is well for nurserymen to bear in mind that the certificate of inspection should be copied exactly as given, and not to changed in any way.—F. L. Washburn.

LEAF CURL, OR PLUM POCKETS.—The trouble with a plum branch received from southern Minnesota, that has its leaves badly distorted or swollen into a sort of pockets, is that it is affected with a disease commonly known as leaf curl, or plum pockets (*exococcus pruni*). This commonly causes on the plum the swellings known as plum pockets, on in the peach a very destructive disease known as leaf curl. The most successful known method of preventing this disease is to spray the whole top of the tree with strong Bordeaux mixture made from the formula, 5 lbs. of lime, 5 lbs. sulphate of copper and 25 gallons water; or a solution made up of one pound of sulphate of copper to 25 gallons of water. Whichever formula you decide to use it should be sprayed on the trees about two weeks before the buds open in the spring. This has been found a very satisfactory remedy for this trouble.—Samuel B. Green.

THE "SPLENDID" APPLE.—Mr. R. J. Cummins brought into this office early in April a very large, fine apple of excellent quality, which he called the "Splendid". At different times during the winter Mr. Cummins has brought this same apple into the office, and in September last I saw this fruit upon a number of trees in his orchard at Eden Prairie, in this county, and the trees appeared to be hardy and were carrying a good crop. Upon correspondence with S. D. Richardson, from whom Mr. Cummins secured this tree, we learn that it is one of the Oligier seedlings. Mr. Richardson, replying to my letter in regard to it, speaks of it as "a better keeper than the Wealthy, fully as hardy, a large, light colored apple of good quality and a better nursery tree than the Wealthy, being a seedling of the Duchess and thoroughly tested in his locality."

A later communication from Mr. Richardson says that the original tree bore a crop of twenty-eight bushels last year. It is over thirty years old and still in good condition aside from being broken down some from its load of fruit the past season. Did not blight any last year. He further says that he never saw a tree of this variety, either young or old, injured by the winter. All things considered, this is evidently a Minnesota seedling of some value.

STORING FRUIT FOR THE STATE FAIR—The usual arrangements have been made with the cold storage house of A. Booth & Co. 203 North 5th St., Minneapolis, to take care of fruit stored with them for use of exhibitors at the coming state fair, and those who are planning to exhibit there are urged to take advantage of these facilities for storing all early ripening varieties of apples and plums. Apples going into cold storage should be allowed to remain on the trees until attaining full size and color, but not until they begin to soften. When gathered, each specimen should be carefully wrapped in one, or, better still, two pieces of soft paper, packed securely in a box so they cannot rattle around and sent by express, charges prepaid, to cold storage without even a day's delay. The principal difficulty about keeping fruit in cold storage is that it is not stored immediately upon being gathered. Even two or three days will interfere seriously with its keeping. Handle with great care to prevent bruising, and of course for this purpose none but the very nicest and most perfect specimens will be gathered. Tags to be used in shipping this fruit to cold storage have been prepared and will be furnished upon application. Address for this purpose, or on any other subject connected with the fruit exhibit at the coming state fair, A. W. Latham, 207 Kasota Block, Minneapolis, Minn.

Store at the same place fruit for exhibition at the winter meeting of the society, but always in *separate* packages, properly marked on the tag.

A VETERAN LIVE OAK AT PASS CHRISTIAN, MISS., WITH A SPREAD OF 186 FEET.

THE MINNESOTA HORTICULTURIST.

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No. 8

THE ECONOMIC VALUE OF SHADE TREES.

CHAS. M. LOBING, MINNEAPOLIS.

"Trees are indeed the glory, the beauty and the delight of nature."—*Christopher North.*

"The great want of cities is trees."—*Walter Crane.*

"The best poem I ever produced was the trees I planted on the hillside."—*Oliver Wendell Holmes.*

In 1640 the town of Hingham, Mass., passed a vote that "From the date hereof thenceforth, there shall be no tree or trees cut on the highway upon the pain of twenty shillings, because all good trees are to be preserved for the shading of cattle."

More than 250 years have passed since this humane order was adopted, and we are supposed to have advanced in civilization, and yet there are many farms in this state on which there is not a tree growing to afford shade to the cattle from the fierce rays of the summer sun. Notwithstanding the Pilgrims were obliged to clear the forest in order to make their farms, they seemed to have a higher appreciation of the economic value of trees than do the majority of the farmers of today. One of the significant incidents indicating the public's appreciation of the value of trees was the unveiling of a monument to the memory of the late J. Sterling Morton, who did so much to stimulate tree planting in every section of the country, and yet "Arbor Day" will be his most enduring monument.

Street and ornamental trees form the most valuable assets of many New England cities, especially those visited as pleasure resorts during the summer months, and several cities spend large sums of money each year for their care and preservation. The city of Springfield, Mass., appropriates each year from eight to ten thousand dollars for the care of its street trees, and many cities have an officer or a commissioner who has exclusive care of them.

One of the problems which it has been hard for the courts to solve is that relating to compensation for injury or destruction of shade trees. As a rule, the damages awarded have been ridiculously inadequate. In Minneapolis, one officer has made

nearly three hundred arrests for hitching horses to trees. The courts have fined these offenders from one to five dollars, many of whom caused almost irreparable injury to trees which could not be replaced for from twenty-five to one hundred dollars. Some recent decisions, however, indicate that judges and jurors begin to realize that the value of a fine shade tree does not consist in its market value for firewood, and the vandals who have been butchering whole rows of fine trees in order to make stringing of telephone and telegraph wires more easy will find that the owners of trees have more right to consideration than has heretofore been conceded.

In the circuit court at Kansas City, a lady was awarded judgment for \$200 against the Kansas City Home Telephone

Moving large shade trees.

Company, whose employes had cut the top out of a shade tree six inches in diameter which interfered with the wires.

Another interesting decision is that recently rendered by the supreme court of North Carolina. The Ashville Electric Lighting Company, even after it had provided itself with the permission of the superintendent of streets, afterward approved by the board of aldermen, ignored the protest of the owner and cut a tree standing on the outer edge of his sidewalk. The owner

sued the company for damages and the jury awarded him a verdict for \$499.00. The case was appealed, and the supreme court sustained the decision.

There have been some remarkable instances of the value set upon trees in the amount paid for moving and protecting them. In an eastern city a tree was moved at a cost of more than one thousand dollars, and it is not unusual to hear of their being transplanted at a cost of from one to three hundred dollars. The owner of some very old trees in Connecticut which were suffering from the decay of the heart wood had the decayed wood thoroughly taken out, the surface treated with creosote, then painted with heavy lead paint. The cavity in one of these trees required more than fifteen tons of cement concrete to fill it. The facing was covered with lamp-black to match the bark and was corrugated in such a way that at a little distance the filling could not be distinguished from the bark. The cost of treating this one tree was nearly \$400, and the owner was delighted with the prospect of adding many more years to the life of the tree. It is now 155 years old, which the tree had already lived.

Cleaning a cavity in a white oak on the Cheney Estate, So. Manchester, Conn., afterwards filled with 15½ tons of cement— in 1905

The economic value of trees in cities cannot be estimated, but it is well known that they are great aids in preventing conflagrations, that they add greatly to the health and comfort of communities whose streets are well shaded—and that they purify and cool the air scientists have given us abundant proof. Purification, as they tell us, is performed as follows: The carbonic acid gas, which is given off by man and animals, at every breath, also from every coal of fire, whether in stove or furnace,

is an essential factor in the food of plants. For obtaining this gas the under side of leaves is provided with valves of delicate mechanism, and so numerous that by actual count 25,000 on an average are found on each square inch of surface. This would give 100,000 or more of these valves to every ordinary leaf. Without estimating the number of leaves on a tree, these figures will give an idea of the extent of their purifying power. For cooling the hot summer air they are no less valuable. The moisture absorbed by the roots is transferred to the leaves, and a portion of it exhaled through the small valves. This exhaling power of leaves has been carefully investigated, and the best authorities report that it is sufficient to have a perceptible influence in affecting the humidity of the atmosphere and cooling the air. We all know how refreshing is the air in the woods after a walk or drive in the open country, and the comfort of shade in a city street on a hot summer day.

Several of the states, recognizing the value of roadside trees, offer bounties to encourage planting them.

One of the great needs of Minnesota is better roads, and it is to be hoped that in the near future the state will follow the example of the eastern states and macadamize the most important thoroughfares and line them with trees.

In the last report of the highway commissioner I find the following: "Trees break the wind and also assist in keeping the road in good condition. Especially are trees planted on long stretches of macadam roads where they occupy an exposed position. The trees afford shade and thus allow the moisture to remain in the road without any artificial assistance in the way of sprinkling. This in time will remove the necessity of sprinkling the roads, as it has been found that macadam roads protected by trees retain their shape longer and do not show wear or break up as quickly as do roads not so protected."

I have dealt with this subject from the practical standpoint, but I cannot close without referring to its aesthetic side.

There are but few people in the world who do not admire noble trees on streets or country roads, and wherever they are found, such thoroughfares are the favorite drives.

The man who plants trees is not only a public benefactor, he, besides, ministers to his own well being, physical, mental and spiritual. He deserves credit for altruistic work, and he displays good judgment in securing contentment for himself, thereby affording a double motive for his endeavors. Honor and happiness will be his reward.

THE USE AND ABUSE OF THE HOME MARKET BY FRUIT GROWERS.

R. A. WRIGHT, EXCELSIOR.

That the home market is abused by the average fruit grower is a recognized fact. They load the market with inferior fruit, put up in all kinds of packages, with but little thought for the consumer, but expecting them to pay the price for the best fruit carefully packed.

The majority of the growers seem to think if they get the fruit into the hands of the merchant or commission man that is all that is required of them; the condition of the fruit does not seem to enter into their calculations. Take the small fruit for instance. How much of it is put on the market over-ripe, soft and in half filled boxes, with the poorest always in the bottom! This habit of packing fruit, filling the box with inferior quality, having a thin layer of good fruit on the top, has become so general that the purchaser no longer feels secure in buying fruit because it looks good on top. To satisfy himself he must examine the whole package by taking the top layer off, tipping out the fruit, pawing it over and tumbling it about. Of course this process injures the fruit greatly, whether it be berries or apples, and this in time reduces the price of the package, and the grower is the loser.

A great many people wonder why the commission man sells some cases for twenty-five or fifty cents less than he does others from the same shipment, and the reason in most cases is that some of the fruit in these cases has been handled and pawed over so much that it has deteriorated in looks and quality; consequently the value has decreased.

Then again so many people gather their fruit and send it to market without knowing when or in what shape it reaches their customers. I will cite a few instances that have come under my observation during the past two seasons. One party said to me "I am not one bit satisfied with my returns from the commission man." By a little questioning I found they had shipped 400 cases of berries without ever going to the market to observe the conditions of market or fruit. They had shipped on a train that did not deliver the fruit to the market till 9:30 A. M. Yet they laid the whole blame to the commission man.

Another party brings in a fine case of gooseberries and remarks, "You ought to get a good price for that," and we do. The next day a kick is registered by the purchaser—four quarts of moldy

currants in the bottom of the case and fifty cents deducted from the sale price.

Another party marketed 600 bushels of Wealthy apples put up in barrels—they looked fine on top. The commission man had a good customer who was willing to pay for a good article. He purchased five barrels, the commission man delivering them to his store. The next day the five barrels were returned. I happened to be present at the time and saw them. There was scarcely a half bushel of good apples to the barrel and about one and one-half bushels in each barrel that should have been kept at home and fed to the stock. I asked the commission man what he would do with them now. He replied, "Sell them on their merits, and take the first offer that comes along."

Now there is a great deal of this kind of marketing fruit. It hurts the market, it hurts the consumer very much, and in the final round-up it hurts the grower.

There are fruit growers who put up their fruit honestly, and when you see the top you know the whole package is the same. It takes only a little time to establish a reputation in fruit packing, and purchasers will buy without going to the bottom of every package. I know fruit growers who follow the honest plan of packing their fruit, and they always have ready sale, and quite often their fruit is engaged in advance. I have a neighbor who delivers his apples to the commission man on a guarantee; his apples are never handled over to see what is in the middle or bottom of the barrel, neither do they have to stand around in the store until they spoil before being sold. They sell quickly and at the top price. So we see that there is satisfaction and profit in fruit marketing when it is carefully done.

Before leaving this subject another abuse of the home market should be recognized that an effort may be made to correct it. In the early fall when fruit is scarce and prices are good, the growers all find it out about the same time. They immediately flood the market with fruit of poor keeping qualities, and in a very short time prices are away down and returns most unsatisfactory and disappointing to the grower. Could not this disastrous result be avoided? So few growers keep in touch with the market, in fact, they never go near the market to see what the supply and demand are or to note the condition of their fruit after its delivery. This custom is all wrong; the grower should take the time once or twice a week to visit the market, confer with the commission men, and if the market is being overstocked hold their shipments for a few days until the market is cleared up. The fruit can be kept in

much better condition at home than it can be where piled up in the market. Continuing to keep in close touch with the market, results will be more satisfactory; better prices are sure to follow this extra effort on the part of the grower, and, besides this, pleasanter associations will be established between the commission merchant and the fruit grower, which will finally include the consumer.

Mr. Levi Longfellow:—I want to say a word in regard to that paper. Inasmuch as Mr. Wright is a grower and not a buyer, I consider that a remarkably able paper, and I am sure I voice the sentiment of every merchant in the city when I endorse every word he has said, and I trust our members will take the paper to heart when they read it after it is published and profit by it. We should all be benefited by it to heed the advice given, and it would be to the interest of the grower from a monetary point of view, and of more value than we can now estimate. (Applause.)

GATHERING AND MARKETING FRUITS—FROM THE STANDPOINT OF A COMMISSION MERCHANT.

GEO. E. BRYANT, MINNEAPOLIS.

It is evident that opinions differ very widely concerning this subject when you consult the grower, the packer, the shipper and the salesman or commission merchant, although their interests are really in common from start to finish—in fact, a mutual benefit proposition.

This is an era of combinations, consolidations, co-operative associations, etc., all for the purpose of getting into closer and more helpful relationship. It has long since been demonstrated that the fruit business is no exception, its needs and requirements are no less, and I will venture to say that it is the most hazardous and soul trying business, and yet, when properly conducted, may prove the most interesting and profitable. Time has long since passed when hap-hazard, go-as-you-please and when-you-please ideas will work out successfully. Up-to-date ideas, on purely scientific lines, are absolutely necessary to success these days, and when you find a successful fruit grower or shipper today you will find a man who is wide awake to modern ideas, a man who reads and thinks about his business and who appreciates the necessity of following his fruit to market often enough to find out from his personal observation what is required in the matter of grading, degree of ripeness, style of packing, kind of packages, etc. I speak from eighteen years' experience as a commission merchant when I say many fruit shippers *do not* appreciate this, which is of the

greatest importance on their part, and therefore they fail to understand why their shipments did not turn out better.

I am frank to say that we receive many shipments of plums, crabs and native apples in grain bags and promiscuous sized boxes and old barrels with cloth tops, and a letter accompanying from the shipper saying this is a sample lot of their finest fruit, very carefully picked and packed personally, and that prompt returns at the highest market prices are expected. When shipped in this condition the fruit is invariably bruised in transit, and if ripe or the weather hot decay will occur quickly. The commission merchant must necessarily sort and repack the fruit in new standard packages, incurring some extra expense. Too often shipments made under these conditions arrive practically worthless and sell for a trifle over transportation charges. If the shipper is here and sees with his own eyes the result of poor packing, he appreciates the services of the commission man and takes knowledge home with him which is everlasting, for seeing is believing.

If, as has been demonstrated, our Minnesota berries and small fruits have sufficient carrying qualities to be shipped hundreds of miles under proper conditions, surely local shipments within a hundred mile limit should arrive in prime condition, and when shippers acquaint themselves fully with the necessary conditions under which their fruit must be picked and packed, then, and not until then, will the bad order feature be eliminated.

Fruit of whatever kind should be packed in new, uniform sized packages, and the fruit sorted and graded as to size, color and ripeness so far as possible, and full measure given—short weight and measure work to the detriment of the shipper every time and place the commission merchant in a thankless position and unable to sell goods for what they really represent. The trade want a square deal now-a-days, and when they buy a quart of berries, or a bushel or barrel of apples, they have a right to expect the amount which that term implies. In seasons past fruit coming from certain localities was discriminated against by the trade because of the short measure packages used, but I am happy to say the short measure package is almost a rarity now compared with a few years ago.

Minnesota has a great future in fruit raising—which has been largely experimental—we are now becoming more practical fruit growers; our acreage is increasing rapidly, our fruit meeting practical demands, and of necessity we must soon seek more distant markets in which to dispose of our products to best advantage. We have only to look at our friends—and competitors, possibly—

in the middle and eastern states, likewise the southern berry and truck grower, and not the least, by any means, the citrus and deciduous fruit ranchers of the Pacific slope—and where the most wonderful strides of progress have been made the past decade—and we realize how possible it is for Minnesota to attain to the same enviable position in the fruit world which she claims with reference to bread and butter products.

Realizing this, large growers and associations should keep in close touch with the commission merchant or jobber, who is thoroughly acquainted with supply and demand, and work in harmony throughout the year. Selling the goods to best advantage depends very largely upon the art of picking and packing and shipping at the right time.

Mr. Geo. J. Kellogg (Wis.) :—I wish to ask a question in regard to berries. You give me a 10 ct. quotation on strawberries this morning, and we immediately pick and ship them in twenty-four hours, but when they reach you they are down to eight cents. How do you account for that?

Mr. Bryant :—There are a great many conditions which cause a strong advance or decline in the market, which the grower who is at or near the market understands, but the grower who is at a distance does not fully realize those conditions. Supply and demand, of course, are the chief reasons of the strong changes in the market. Very often a large arrival of poor fruit causes a strong decline; in fact it is pushed on the market to sell for what it will bring. There is one thing true in reference to strong declines or advances, a decline seldom comes from an over-supply of fancy fruit. A decline generally comes from an over-supply of poor fruit, which must be sold immediately upon arrival on the market.

Mr. Sahler :—I would like to have a little bit of light on the kind of package preferred by the commission men as between the bushel basket and barrel for apples. Fruit growers near the large cities that have large platform wagons and move their fruit to the market in baskets, get it there in good condition, but we who live at a distance have to ship our fruit by express or freight, and when it comes to the market it is somewhat damaged and bruised. What is the best package in which to ship our fruit so that it will arrive on the market in good shape?

Mr. Bryant :—For apples I would recommend the standard three bushel barrel. It has been stated by Mr. Wright and by Mr. Smith that the three bushel barrel helps the commission man to make a sale of three bushels at a time, while the smaller package limits him to a bushel or a bushel and a half. That is the strongest recommendation. And then another is that the fruit will carry better than if shipped in crates or baskets. The barrel is the universal package for apples except on the coast, and it will no doubt be adopted there.

Mr. Sahler :—I would like to ask the commission men whether

it would be advisable to have a law passed here in Minnesota so our fruit would be graded No. 1, 2 and 3 and put this fruit in barrels. I see by a recent report I read that they passed such a law in Canada last fall. I thought I would bring this matter before the society at this meeting to see what the members thought of the proposition.

Mr. Bryant:—There is so much involved in that question that I do not feel like making an attempt to answer it. It is a question that is well worth discussing, but I think the gentleman would get a good deal more satisfaction by writing to the National Apple Shippers' Association.

CO-OPERATION IN SELLING FRUIT.

H. B. HOTCHKISS, EAU CLAIRE, WIS.

Let us look at the past and the present conditions of the fruit grower and then consider his great possibilities in the future under systematic control of marketing his fruits.

When the grower starts in the work of production in a newly settled district, or in a district where there has heretofore been no fruit grown, he has practically a monopoly of the trade and gets a good price for his fruit. Why? Simply from the fact that the commission houses have looked up these good markets away from the growing districts and having no competition put up the price and hold it there. Wait a few years until every farmer in this new district puts out an orchard and a berry field and puts the fruits on the market, and see the condition of this pioneer fruit grower change. Soon the home market is glutted, and the supply cannot be used, and prices, once profitable, drop below the cost of production.

Some sharp, shrewd dealer finds that there is a shortage in fruits in nearby towns, buys up this surplus crop, often at ridiculously low prices, ships to these short crop or non-producing districts at the old fancy prices he used to get and reaps a profit which under a systematic control of marketing by the producer would have kept his business on a profitable basis.

Does not this lesson teach us that we growers have been at the mercy of the dealer with no mercy shown?

Let us follow up the condition of the producers by reviewing our own experiences.

After finding the condition our affairs have arrived at, a few of us growers get together and organize a fruit growers' association with the object of bettering our condition. We secure the address of a few commission houses in some of the larger cities not too far distant and ship our fruits to them. They in turn sell to their

city trade all it will handle; the surplus they send to out of town customers where there is no fruit raised or an insufficient supply and get the old prices, those good old prices some of us used to get when we first started to grow fruit. At first we used to get good returns from these commission houses, but have not the prices dropped and dropped until there is no more any profit in raising small fruits? The commission man sends us a nice quotation on the price for fruit, but how often has he paid the price quoted? I have been connected with shipping fruit to commission men for ten or twelve years, but never have I known one to make returns for the price they said the fruit was selling for—not once in the ten or twelve years. Pretty hard statement to make, but it is a fact nevertheless.

What has been the result of dealing as an association under the old plan of consigning to the commission house? I understand from members of other associations, as well as knowing, that our own association is in what you might call a dying condition if not dead already. There are some of the members in all of the associations who will live in a new or reorganized society, one that will be built upon a solid base *demanding* an honest return for our labors, one in which the producer will be the salesman or else have such control of the salesman that he can sell only at a profitable price.

By co-operation on the part of us producers of fruits, vegetables and all farm products, even as the bankers, meat packers, transportation companies, manufacturers, mining companies, etc., co-operate, and even all of these co-operating, is it not in our power to reap even greater profits than these corporations, for are they not one and all dependent upon the producers for their raw materials for manufacturing, to transport, etc., etc? Oh, let us, as producers unite ourselves into the strongest, most powerful unit of business this world has yet known or ever can know!

Will it not be cheaper for us to hire men to sell our products, giving them a stipulated salary, demanding a profitable price, than to turn over our produce to these same men to sell at any price and return to us any portion they feel inclined to or, as in some instances, nothing at all?

I know of one dealer who bought berries in 1904 at 75 cents per 16 quart case and sold at \$1.50 per case. This last season he bought them at 75 cents and 80 cents, and the St. Paul wholesale quotation was \$1.86. A nice profit, was it not? Why could not the producers have hired a good business agent, at a good salary, to have done this for them and divide this enormous profit of one man

between the producer and consumer? There is no reason why they cannot if they go at it. It is in their power.

Last winter at Madison, Wis., two papers were read at the annual meeting of the Wisconsin State Horticultural Society relating to this subject of co-operation in the marketing of fruit, resulting in the society taking the matter in hand and appointing a committee of three, consisting of Wm. Hanchett, President of Sparta Fruit Growers' Association; D. E. Bingham, of Sturgeon Bay Association; and H. B. Hotchkiss, of Eau Claire, Wis. The duties of this committee are to formulate a plan under which all fruit growers can co-operate in marketing fruit. The duties of this committee is no child's play but rather a task for men in which time and money are necessary. It will take the assistance of *every* fruit grower both in time and money to put in operation and carry out a plan when once formulated. What if it does? Have we not already put in the hands of the middlemen enough money to build great warehouses, cold storages, pay handsome salaries and handsome profits to build beautiful even palatial homes? Won't we continue this just as long as we continue to dump our products in their hands to sell at their price and return as much or little as they see fit? Do you not see that it is just as important to sell at a profitable price as it is to raise the luscious fruit and the golden grain?

Mr. Hanchett has been called by the Iowa people to present this subject at their annual meeting. Now won't you here in Minnesota take a hold with your sister state and help control your own business and place it where it belongs, at the head of all the professions and occupations both in respect and finance.

I met Frederic Cranefield, secretary of the Wisconsin State Horticultural Society, several times after the annual meeting before leaving Madison, and he said to me each time "I did not think much of your subject when making out the program, but it keeps impressing itself upon me more and more. The more I think of it the more I see that it is one of the most important questions we have to deal with. What is the use of producing the fruit unless we can sell at a profitable price?"

PRIZE PANSIES.—1. Buy the best seed procurable—such as Masterpiece or Bugnot's Selected. 2. Sow in August for spring flowering or in June for fall flowering. 3. Prepare the bed specially by taking out the ordinary soil to the depth of one foot and replacing it with a thoroughly mixed and pulverized combination of leaf mould and well-rotted cow manure in equal proportions—also mix in a little bone-meal and wood-ashes. 4. Keep the plants moist. Give some shade during July and August and protect with leaves in winter.

A SEASON'S EXPERIENCE IN CROSS-POLLINATION.

WM. A. PETERSON, MINN. SCHOOL OF AGRI., ST. ANTHONY PARK.

The crossing of plants having different habits and characteristics with the possibility of originating some variety superior to any of its kind now growing is to me an intensely interesting and fascinating line of work. It can be carried on by the amateur as well as by the professional, though the more knowledge one has of the history, past environments and characteristics of the plants he is working with the greater is the possibility of success.

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- a. Carmen No. 3, a popular variety of potato but very subject to blight.
b. *Solanum commersoni*, a wild form of the potato native to South America.

This season's work in cross-pollination has been limited to the potato and grape, and marks but a beginning of a series of cross-pollinations looking towards the improvement of these plants.

Minnesota annually produces 20,000,000 bushels of potatoes, but the increasing loss due to blight and rot during the past three or four years has discouraged many potato growers and created a demand for disease resistant varieties. It is difficult to determine whether this increasing prevalence of potato blight and rot is due

to a greater virulence of the disease or to a decreasing vitality of the potato plant. It seems as though the latter were the case. That there is a great difference in varieties in their disease-resistant power has been conclusively proved at the Minnesota Experiment Station, where about fifty varieties are annually tested. During the past summer the percentage of rot varied with the different varieties from one to forty per cent at the time of digging. This tendency towards disease on the part of our cultivated varieties has led the horticultural department of the experiment station to try to originate new varieties having greater disease resisting powers. As a basis for this improvement the *Solanum comersoni*, a species of potato from the upland plateaus of South America, was crossed with the Minnesota No. 26 seedling. While this seedling is not as good as our average cultivated variety, yet it was the only one out of fifty varieties grown that produced fertile pollen. In fact, one of the greatest obstacles in crossing the potato is to get varieties that produce fertile pollen, for as soon as the potato is brought under cultivation it has a tendency to throw its reserve strength into tuber formation instead of developing seed. Although the seed-ball of the potato normally produces a large number of seeds, yet it has been found that the fertilization of one ovule, or seed, was a sufficient stimulus to cause the seed-ball to develop. A few seeds were obtained from this crossing.

The object in view in cross-pollinating the grape is to originate a grape of good quality which will still be hardy enough to withstand our severe winter climate without protection. The principal reason why we cannot profitably grow grapes in this state is because of the cost incidental to winter protection, which our competitors in the eastern states do not have.

The Beta grape was used as the mother plant in this crossing and was pollinated by some of our cultivated varieties, principally the Janesville. The Beta grape is an exceedingly hardy and productive variety, but the fruit is small, somewhat acid and inferior for eating out of the hand. By crossing it with some of the standard cultivated varieties we hope to produce a grape that will have a hardy vine, like the Beta, and a better quality of fruit. The Beta was used as a mother plant and crossed with the other varieties because it has been found that the mother plant has a tendency to impart the vine characteristics to the progeny while the pollen parent is more likely to influence the quality of the fruit.

Cross-pollination of the grape is a simple process. When the mother plant is in blossom the clusters to be pollinated are selected. The open flowers and late buds are nipped off. The caps are lifted

off of the remaining buds and the anthers removed. The pollen from the other variety is then applied to the pistils, either by using a camel's hair brush or by removing the pollinated cluster when in blossom and uniting it with the cluster to be pollinated. Accidental cross-pollination was prevented by enclosing the pollinated clusters in paper bags. Several hundred seeds were obtained from these crosses.

MODELS OF GRAPE FLOWERS.

- a. Perfect flower, partially opened, with cap (*b*) adhering, self-fertile.
- c. Self-sterile flower (reflexed stamens).
- d. Staminate flower.

A number of interesting facts were brought out in connection with the cross-pollination of the grape. One of the most important of these is that there are three kinds of grape flowers, self-fertile, self-sterile and staminate. The staminate flowers produce no fruit and are only found on vines growing wild. Self-fertile flowers produce fertile pollen, and vines having such flowers will bear fruit even though planted by themselves. Self-sterile varieties produce sterile pollen and will not bear fruit unless planted near some self-fertile variety. When the vine is in flower one can easily determine what class it belongs to by examining the flower and pollen grains. Self-fertile varieties have upright stamens and oblong pollen grains. A high power microscope is necessary for determining this latter characteristic. Self-sterile varieties have reflexed stamens and angular pollen grains. This difference in varieties is not generally known by nurserymen and is seldom taken into consideration when selling the different varieties of grapes. Thus it may happen that the farmer will buy a variety which, like a pistillate variety of strawberry, will blossom profusely but produce no fruit unless planted near some self-fertile variety.

HORTICULTURE FOR THE SCHOOLS.

MRS. W. T. MCMURRAN, ST. PAUL.

I am going to make a plea for practical horticulture for practical purposes. If I am not mistaken as to the work of this horticultural society, it is of an eminently practical nature, and perhaps what I shall say will not compare with the discussion that has preceded it on the subjects of forestry, fruit culture and gardening. It is one branch of this work I would like to speak about this afternoon, and that is concerning flower culture in our state. An outsider like myself, ignorant of the science of horticulture, cannot fail to be impressed with the results already attained. Everywhere the work of horticulture is being expounded, and the work should be explained by such simple methods that everybody may gain a knowledge of it, so simple that a child can understand it—and that brings me to the point I wish to speak about, of getting the children interested in horticulture.

Now then, how can we go about it to bring this information to the largest number of people in the most effective and practical way? I think there is no part of our public so easy to reach as the children, and there is no better way of reaching this class than through our public and parochial schools. We have to go carefully when we get here, because we have to understand whether there is a real personal interest in horticulture or whether it is a part of a widely expressed movement of schools for larger results in educational fields—and that brings me to the first three points I wish to speak about briefly.

The first point is, are we to introduce the subject in the public schools, and are we in touch with the best that modern thought has to give; second, of what benefit would such an education be to the child; and, third, would it be wise to provide a place in the curriculum as it now stands for this subject.

First, then, can we through this work get the children in touch with the best thought of modern times? I think the highest claim made for modern education is to develop character, not merely to develop moral principles, but to develop responsible, intelligent and self reliant citizens. High as has been the aim of our educational system, its methods do not seem to have been altogether satisfactory. That character, say critics, is exactly what it fails to develop. Business men say that many of the young people that come from our public schools are ignorant

and unfitted to work, and that opinion is confined to a small number by no means, but it is quite widespread, and you are all perhaps familiar with the complaints made against this system. I believe a step in advance was certainly made when our most thoughtful educators came to the conclusion that any system of education which is not supplemented actively by manual training is not conducive to character training, and I believe in the light of later experience they might have supplemented the statement by saying that no training was conducive to character building that was not actively supplemented by the practical things in life. You will notice this complaint is not made against such as come out of the Mechanics Art High School in St. Paul or out of the State Agricultural College, but, on the contrary, one man said to Prof. Weitbrecht, "You do not turn out common, plain workmen, you turn out mechanics." I think the graduates of our agricultural school tell their own story. Why this difference, this marked contrast and difference? I believe the vital fault lies in the lack of this element of practical training. I believe you will find you are training simply to the end that they receive the principles of ordinary education, but you will find that you must train for the actual activities which the boys and girls will meet and have to carry on after they leave school, and I believe that is the essential element. That is rather a radical statement, but I believe experience has borne that out.

You can teach the children to know the difference between the real and the sham, and I believe if you wish to produce efficient, earnest men and women you must bring the realities into their school life and equip them with the best that the modern day intelligence can give them. Now there is, I believe, a great defect in our graded schools. There is a lack of this essential element, and great as the changes have been, I believe that the changes that are to come are to be of a much more sweeping nature, in fact people are coming to demand a change in the educational system that will bring children in contact with the large matters in life, and children are beginning to feel as well as parents that it is not only unwise but criminal to turn children out into the world with practically no preparation. It is in the graded schools where the large mass of children are reached. A large percentage never see the high school, but they leave school in the fifth, sixth or seventh grade, much earlier than is required to prepare for high school. They go out from its influence, and they are never reached by any educational influence afterward.

These changes that we desire will not come in a day, but a little here and there. Here comes our part. People will have to be awakened to the importance of our immense public affairs, to the large results we are achieving, the immense sums of money spent on our school system, and if we cannot put into the school life, into the curriculum of the student, if we cannot put real interest into his life, if we cannot fit him for the practical things in life which he is bound to meet, then I think we are absolutely failing to comply with the trend of modern thought.

That brings us to the second point: What shall we do with the child? In the first place, we want to bring before him just a few of the realities of life. If a child is taught to plant trees and care for them, it does not make any difference what mark his teacher gives him his quality is to be told by those trees. It is a reality to him, and it is teaching him that certain results depend upon himself. It provides him something that will develop his character, something that will broaden his outlook of life and make him think for himself. It gives him new aims to follow, and he starts out better equipped than if those practical things had not been put before him. I wish we could all feel what we would like to have our children develop, that broad development in life than which we never find anything so sweet. If you give those boys and girls something that appeals to their self respect, it stimulates their respect for the rights of others, and you have given him something of the greatest value, it is what starts a new train of thought. In the few cents he spends for a tree he looks forward to a result the consideration of which is of the greatest practical benefit to him. There is one thing perhaps more important—and I believe it would help to keep the boy and girl on the farm—and that is, by putting a little work on our city lots the child is taught to work towards a certain definite object. If it should turn his attention away from the city and bring his thoughts to the grand independence and prosperity of the country and the life of the country, then we should encourage him to a study of this subject, and such a training would help to solve one of the great problems confronting us in the city. I wish there were opportunity and the time were not far distant when the industrial schools of the city would turn naturally to the country and to the agricultural schools for training.

What can this society do to bring into the schools this subject? If you have ever tried it, you will find that it will become another subject in the curriculum and will require another teacher. I believe there is a place for this subject, and school teachers should study this subject, and certain hours in school should be reserved for the

subject in the way of supplementary reading. If this horticultural society could induce the people of the state in authority in school work—and through them the teachers of the state could be reached—to take up this work, it would be the most systematic way of introducing it, and I believe it would reach the children in the most effective way. If they could supply the teachers of the state with printed material, terse and to the point, I believe the teachers would certainly do all in their power to further the movement. I believe if a prize could be offered for literature on this subject, a story, if you will, which would kindle the interest of children in trees and flowers, just such books as "Black Beauty" and "Beautiful Joe," I believe it would appeal to children just as much as those books have appealed to them in the sentiment they are seeking to inculcate. I think such a book would be a great addition to our educational work and the effort would be well worth while.

If in our schools Arbor Day could be observed, if we could induce teachers to observe Arbor Day, it would be a long step in the right direction. The day had almost fallen into disuse until interest was aroused in it in St. Paul two years ago. It was wonderful to see the real interest that was created. It was of no more interest to the children than it was to the grown people. If Arbor Day could be observed, not only in sentiment but in a practical way, by giving a lesson in the planting of trees, giving instruction in the care of trees, and not only in a general way but by going into the details, such as how the tree should be set, at what depth, what size hole to make, what kind of soil should be used, what variety should be planted in certain situations and so on, I believe it would be a practical way of giving instruction, and it would be of interest and encouragement because the children would know what to do.

There are so many things that present themselves, and that probably present themselves to your imagination also, that I can speak of only a few of them today. I believe the best modern thought has to be centered upon this problem of education, and although the movement is a very great one to accomplish I believe it will eventually reach every home in the state. If we can bring this matter home to you in the way of inducing you to beautify your home, in making your child happier and better in his home, and if we can make it practical and plain that there is a systematic way of accomplishing this result the problem will soon be solved. (Applause.)

Your president suggests that I say something of what was done in the way of introducing horticulture in the St. Paul schools. I think the first step in St. Paul was to work all the excuses we could

find, because I want to tell you that whenever you touch the school system you touch a tender place. The curriculum of our public schools has to be left intact, even where slight changes are desired to be made. However, there is a place where we can put in this subject. There is a subject called "nature study," and you can teach the children without interfering with the curriculum. We went to the superintendent of schools in St. Paul, and he was very much interested in it and asked us to bring the matter before the board. I suppose we should have to go about it in the same way to reach the teachers of the state. You would be astonished to find the ignorance on this subject. When we began we were in that list, and we have not gotten out of it yet. We went to Prof. Green to secure counsel and assistance. We told Prof. Green there was a club in St. Paul that believed this was the right thing to introduce in the schools. We told him this club had no money, and we thought we could get seed from the state agricultural college, and a number of the members of the club thought we could plant the seed, and in that way we could get a good many thousand trees that we could distribute to the children in the schools. I smile now when I think of it. Prof. Green said there was a quicker way and asked us why we did not go to the school authorities and get them to pay for the trees, and he said he thought he could furnish us the trees so we would not have to wait three or four years for those grown from the seed. So that offer was made to the children, the money was collected, and we were perfectly astonished at the number of trees that were sold, it amounted to thousands. You remember the day those trees were distributed to the high schools, I think there were some fourteen thousand, and on that following Arbor Day there was such a digging of holes and such planting that the earth seemed to be perforated with holes. The holes were dug three feet in diameter and eighteen inches deep, and with the trees we gave out a little pamphlet with illustrations and concise directions as to how those trees should be planted and cultivated and cared for, how to protect from sun scald and from root-killing, because there was the densest ignorance, and many could not tell the difference between an apple tree and any other—so we had to begin at the very beginning. I think there is a better understanding now. That was the way we began.

The President: It is something to know that over in St. Paul there were planted fourteen thousand apple trees this year.

Mr. C. S. Harrison (Neb.): I would like to say a word in regard to this colossal ignorance. I had a college president come to see me, a good man, a preacher, and I was showing him some of my phlox with pods as big as peas, and he said, "Do you eat those

things?" "Eat them! There was another college president who wanted to plant catalpa seed. He had a timber claim and wanted to raise trees. He got his seed and planted it and then he came to me and complained that it would not come up. I asked him how deep he planted the seed—you know the catalpa has a very delicate seed. He said he did as I told him to, he planted them like onion seed. I asked him how deep he planted his onion seed, and he said six or eight inches. I told him he could bid good-bye to his catalpa because he would never see them again. I told him he had better quit preaching and study trees. (Laughter.) You find this ignorance everywhere, and even college professors pride themselves on what they do not know right here. (Laughter and applause.)

Mr. A. J. Philips (Wis.): I think the speaker touched a very vital point when she said that in these movements we must touch the children, we cannot do much with the older people. A learned judge from Colorado went to Chicago with me last year and spoke to the children. He spoke of the politics of Colorado. He said the Democrats were just as corrupt as the Republicans, and they were both as corrupt as they could be, and the only way they could ever get clean politics into Colorado was to reach the children, they could not do anything with the older people. When they were trying those car barn murderers in Chicago, who had committed the most atrocious murders ever heard of, I wrote a half dozen questions and sent them to Judge Kohlsaatt and asked him if he would ask those men those questions, and he said he would. One was if they had ever been taught nature study in school, planting of trees or anything of that kind. Two of them said they never had, and the other one said he had never heard of such a thing. Another question was whether anybody had ever taught them kindness to animals and human beings. The answer was that nobody had ever taught them any such thing. Another question was whether they ever had any pets or anything of their own. The answer was in the negative. I have forgotten what the other questions were—they were published in one of the Chicago papers—but the others were along the same line. They had grown up in the street with none of those elevating influences around them, and their training or lack of training fitted them to commit the most atrocious murders that have ever shocked the world. When you stop to ponder upon these things I think you can see the force of the remarks the lady made. I don't want to be outdone by Mr. Harrison or any professor in a story of colossal ignorance. A lady said to her husband, who was an eminent professor, "While you are attending to your professional duties, why could I not attend to some little thing to keep me occupied, like raising chickens?" "Why, yes," he said, "if you want to raise chickens I will get you some." He bought some chickens. After awhile one of the hens acted, as she discovered, as though she wanted to set. Well, she set the old hen with some eggs, the hen knew her business pretty well, and in spite of interference she hatched out some nice chickens. The lady thought they were wonderfully nice, and she took the professor out to show them to him, and he thought they were fine chickens. In a few days she said to him, "There is

something wrong with our chickens, one has died and the others look bad; I wish you would go out and look at them." He said, "I don't know anything about chickens." Just then Mrs. Brown, a neighbor, came over, and she said, "Your chickens look pretty bad, what do you feed them?" "Feed them?" said the professor's wife, "we don't feed them anything, we thought the old hen would give milk enough to feed the chickens!" (Laughter and applause.)

NOTES ON WAUSAU (WIS.) EXPERIMENT ORCHARD.

GEO. J. KELLOGG, LAKE MILLS, WIS.

Location three and one half miles northwest of Wausau, Marathon Co., Wis., in township 29, being 174 miles north of Illinois.

Soil, clay loam, with broken flint rock.

Subsoil, clay and disintegrated rock, good under drainage.

Surface gently rolling, so water will not stand, except one sag.

Planted mostly in 1896.

Well cultivated and winter cover crop.

1904, three times sprayed and no scab.

1905 " " " so wet, scab plentiful.

Trees protected by veneers and some injured by the protection.

The Northwest Greening and Wealthy were not bearing well this past season, seem to be suffering from leaf blight, scab and, as some call it, a canker in the crotches. I think it is lack of pruning from the time of planting.

It will pay orchardists of Minnesota to visit this orchard of ten acres in the growing season, and take notes. Our secretary has promised to have a record there for the inspection of visitors.

There have been planted eighty-one varieties of apples, of which the following list was most profitable the past season (there was about 500 bushels of fruit):

Duchess, Hiberna, Hamilton, Iowa Beauty, Longfield, McMahon, Murray, Milwaukee, Okabena, Patten's Greening, Randall (7-8 of Goff), Sweet Russet crab, Tetofsky, Thompson's 24 and 46 of Jewell Nursey Co., Wolf River and Whitney No. 20.

Of the following varieties we have growing ten or more trees of a kind: 13 Avista, 47 Duchess, 22 Dominion W., 38 Hiberna, 37 Longfield, 34 Malinda, 64 McMahon, 81 N. W. Greening, 31 Newell, 23 Okabena, 22 Peerless, 28 Patten's Greening, 17 Repka Malenka, 13 Tetofsky, 13 Utters, 105 Wealthy and 28 Wolf River.

The following kinds are more vigorous, healthy and productive grafted on Virginia crab stock: Dominion W., Eureka, Hamilton, Longfield, Malinda, McMahon, Newell, N. W. Greening, Okabena, Patten's Greening, Peerless, Tetofsky, Utters, Wealthy, Wolf River, Windorf and Whitney No. 20.

Plums: Seventeen varieties. The best in 1905 were Cheney, Stoddard, Wyant, Mankato, De Soto and Aitkin.

Cherries bearing: 25 Early Richmond, 20 Late Richmond, 18 Montgomery, 1 Vladimir.

Mr. Cole: What do you think of wrapping the tree with burlap? Is it not better than veneer?

Mr. Kellogg: I think burlap is one of the best protectors we can use on our trees, and I think rye straw is better still; it will go into the crotch of the tree.

Mr. Taylor: Have you ever tried newspaper?

Mr. Kellogg: Yes, it has to be applied twice a year unless you get a good horticultural paper; any others will not do. (Laughter.)

The Chairman: Have you had any trouble with the Virginia crab blighting in the crotch?

Mr. Kellogg: I have not.

The Chairman: I have seen it injured very much.

Mr. Busse: Which of those varieties that you have mentioned is the most healthy and bears the most fruit?

Mr. Kellogg: That beautiful apple called the Hibernial bore the best, and it sold at a good price and was satisfactory. The Okabena was next. The Hamilton is a new variety and is doing very well. It is an Illinois variety. Patten's Greening is doing well. The foliage was good, and the wood made of good growth. The Peerless as a tree was all right, but the fruit was scabby. The Longfield was loaded to breaking, and but for the scab it would have been very profitable. The Longfield did not blight.

The Chairman: Not much blight this year?

Mr. Kellogg: Very little.

The Chairman: I have heard the Hibernial referred to in a very slighting way. I have been an advocate of the Hibernial. I think the Hibernial is the safest tree for the amateur to plant. I wish I had a bushel or two in my cellar right now; I think there is nothing better for apple sauce or pie.

Mr. Benjamin: That is the only apple tree and apple that is perfectly healthy.

The Chairman: As a rule I have not found the Hibernial as productive as other apples, but it is an apple that possesses the ability to do business long after other varieties of apples have disappeared.

Mr. O. W. Moore: The wood blighted on my trees this year.

The Chairman: It will blight on new wood, but it recovers very quickly.

Mr. Busse: We can always look for fruit on the Hibernial, and large fruit, and after a customer buys it once he wants it again.

Mr. Cook: He doesn't down our way.

Mr. Busse: They never blight in the crotches, but in the new growth. They never blighted before, but this year everything blighted except the Peerless.

SEED DISTRIBUTION IN GRAND RAPIDS.—In Grand Rapids, Michigan, this spring, the committee on municipal health and beauty of the ladies' literary club will distribute 15,000 packages of flower and vegetable seeds among the children of the public schools at one cent a package. Each school will be supplied with a list of directions as to the time and manner of planting the various seeds and bulbs. Exhibits of the flowers and vegetables grown from these seeds will be held in the fall, as they were last season..

NATIVE ORNAMENTAL SHRUBS AND PLANTS WORTHY OF CULTIVATION.

FRANK H. NUTTER, MINNEAPOLIS.

At the beginning of this paper I wish to make it plain that I do not speak as a botanist but from the standpoint of one who is interested, not only personally but from business motives, in seeing the lists of available material for ornamental planting in our undeniably severe climate substantially increased.

In consulting the catalogues of many of our local nurseries one cannot but be struck by the meagre list of ornamental stock. Of course in a new country the requirements of the orchard and garden must first be met, and the nurseryman will tell us that the limited demand is responsible for the scanty stock he carries in the department under consideration. Demand regulates supply, to be sure, but I think the time is now at hand when the enterprising nurseryman will find the converse of this statement to be also true and that a goodly supply will create demand.

In orcharding we hear much in favor of northern grown stock, propagated on hardy roots, and in ornamentals the same rules hold true, and the practice of grafting some of the rarer shrubs on tender roots may often explain the failures that attend the planter's experiments. The nurseryman must therefore draw on his experience with apples and small fruits to guide him with his ornamental stock. If, therefore, he can find native varieties satisfactory for his purpose, a great gain has been made; in addition to this is the chance that the observer may stumble onto or propagate some new and valuable sprout from standard varieties. Examples of these are found in recent catalogues: for instance, two or three varieties of cut-leaf elder, weeping red cedar and yellow-barked dogwood.

In preparing the descriptive list which follows, I have used the latest catalogue of a large Eastern nursery which makes a specialty of cultivating, not collecting, native species, checking the same with various handbooks, especially the reports of our State Geological Survey.

Although not specified in our title, let us glance for a moment at our native deciduous trees. Of course the majority of them, the elm, linden, ash, hackberry, etc., are well known and in general use. The Kentucky coffee-tree, with almost tropical foliage, is native as far north as the Minnesota River valley and is a valuable asset to the planter. How few recognize the fact that the ironwood, or hop-hornbeam, is a vigorous and shapely small tree, especially.

attractive when covered with its peculiar seed clusters. The wild cherries are beautiful trees with shining foliage.

The imported cut-leaf birch is known to all, but in the canoe and yellow birch we have large and graceful trees, while the white bark of one and the curiously curly bark of the other add to their artistic value. On the extreme northern boundary of timbered land, and also abundant in northern Minnesota, are found two species of dwarf birches, which should prove of value in shrubberies and on lawns. At times their slow growth makes them almost rivals of the celebrated dwarfed trees of Japan, and the size of a specimen many years old may be stated in inches, rather than in feet.

At the head of the list of shrubs we find the so-called "broad-leaved" evergreens, which on account of our climate and soil are supposed to be barred from our plantings. Lime in the soil is said to be a deadly enemy to the rhododendrons, azaleas and laurels, but chemical analyses have proved this is not always the case. The climate is of course the great obstacle, but there are a few rhododendrons in this vicinity which have survived some severe cold snaps. The laurels are more hardy, and one species, the pale laurel (*Kalmia glauca*), described as an "exquisite little evergreen and very showy," is a native of northern Minnesota, being found "as far *south* as Cass Lake."

Other evergreen shrubs which grow in our northern swamps and which might to a certain extent perhaps serve to fill the places of the box and other tender varieties, are the wild rosemary (*Andromeda polifolia*); leather-leaf (*Cassandra calyculata*), blossoming before the snows are gone; the Labrador tea, and the bear-berry, which forms dense mats on the rocks and hillsides of northern Minnesota and Wisconsin. The latter species will also grow in almost pure sand and is found serviceable in restraining the wandering tendencies of encroaching sand dunes.

We have no true holly, but the *Ilex verticillata*, or black alder, while losing its leaves still retains its scarlet berries in winter, like its southern kindred.

Of the true evergreens, the arbor vitae, white spruce, balsam, red cedar and white pine are to be found in every collection, but of no less value for ornamental purposes are the savin juniper and the native yew, with its hemlock-like foliage and red berry, one the bush for the dryer hillside the other for the shade and swamp.

Turning to the deciduous shrubs our list rapidly expands, and we can only hastily glance at the many varieties.

Of the maples, the striped, or moose-wood, and the mountain maple with its erect panicles of flowers, followed by pendant clusters of seed, which vie with the leaves in autumnal coloring, are large shrubs or small trees worthy of cultivation.

The hawthorns are of interest to the scientist from the many species he has been able to subdivide them into, but of more interest to us is the fact that the several varieties of "thorn apples" found in our section are all beautiful small trees when properly cared for.

Of Juneberries we have several species varying in size and blossom, and while of promise as fruit bearers they might also be developed along ornamental lines.

The chokeberries (*Aronia*), with rich shining foliage, white flowers and brilliant red or black fruit, and flourishing in most any soil, should add to the beauty of our shrubberies.

The New Jersey tea (*Ceanothus Americanus*), a low shrub of our dry wooded hillsides, with its dainty flowers in cream colored masses and of spicy smell, is as well adapted to the lawn as the dwarf spireas so much advertised by the nurseryman.

Of the shrub cornels, or dogwoods, we have half a dozen varieties valuable for flowers, foliage and fruit in summer, and some of them for their colored bark as seen against the winter's snow. The flowering dogwood is known as a southern and eastern species, but several local lists and reports give it as found along the Mississippi River "as far north as St. Cloud." I have been unable to find any one who has actually seen it in this locality, but if it should be found it would certainly be most valuable to propagate from.

Leatherwood with its yellow flowers in early spring; shrubby cinquefoil, continuing the same color into midsummer and fitted to make bright the rocky and waste places; and the three harmless varieties of sumach, furnishing the crimson in fall to succeed the gold of the others, are also on our list. It is to be regretted that two of the most brilliantly decorated of the sumach family in the autumn must be stricken out and classified among nature's outlaws.

Of the *Rubus*, or brambles, probably of little use except in wild shrubberies and thickets or to cover and protect some washing bank, Minnesota has seven varieties. Of willows, there are thirteen species; some of the dwarf willows, seemingly equally at home in the swamp or on sandy knoll, are worthy of investigation for ornamental use.

Elders, black and red, are beautiful in our pastures and none the less so on our lawns.

The strawberry bush, or, from its scarlet berries in the fall and winter, the burning bush, is a fine shrub of our woodlands.

The spireas are some of the mainstays of the landscape planter. Three species grow with us, the dwarf meadow sweet (*S. salicifolia*); and steeple-bush, or hardhack, (*S. tomentosa*); while the larger ninebark (*Opulaster opulifolius*) forms dense thickets along some of the streams in southern Minnesota and Iowa.

Along the borders of the lawn shrubberies, the native snowberry and Indian currant find an appropriate place, and when the foliage has fallen the white and red fruit remains to decorate our plantings.

The buffalo berries have been overlooked by our eastern cataloguer, but are nevertheless a valuable addition to our ornamental list, with their silvery foliage and hardy constitution, and their fruit is also of value to the housekeeper. Though usually regarded as a prairie shrub, one variety is found across the northern section of our state, even to Lake Superior. In this species we have also a very promising hedge plant.

The huckleberry, often to the Yankee a synonym of barrenness, is found to be of value as a ground cover, especially in its autumnal colors. Three species in Minnesota.

Several of the viburnums are also found here, going under different names, the witherod, arrowwood, sheepberry, blackhaw, etc. The cultivated snowball is of this family, but its crowded flower masses are not so attractive as the more delicate blossoms of the native cranberry bush, of which it is a sterile descendant, while in foliage and with its clusters of crimson fruit the former far outranks it.

Last on our list of shrubs we find the pretentious name of *Xanthoxylum Americanum*. One cataloguer thus describes it: "large pinnate leaves with tropical effect, an attractive and valuable shrub"; all this is true, also the following comment, "good to prevent cutting across lots." Any one who has been obliged to work his way through a thicket of "prickly ash", for such is our friend in the vernacular, will appreciate the last observation.

Of vines and hardy perennials, now so much and so deservedly in favor, our woodlands, fields and swamps will furnish many valuable kinds.

To sum up the results of our examination of this very complete catalogue:—of the list of shrubs worthy of cultivation, fifty species are native to this state, besides some I have mentioned here which are omitted from the catalogue; in the long list of ferns therein given a large number are among the nearly fifty Minnesota varieties; of the native orchids a number of species are found growing most luxuriously here, one of them being our

state flower; of lilies, bulbous plants and hardy perennials, out of 176 species listed just one-half are native with us, and of the others one-quarter are represented by allied species, in some cases of equal value.

Even among the cacti we are not entirely left out, for four varieties grow in Minnesota.

With such a showing, in view of the fact that these plants and shrubs will develop under cultivation as certainly as fruit-bearing plants have done, and that educated taste turns to native growths for hints, at least for ornamental planting in any given locality, is it not certain that here is a field worthy the attention and study of the enterprising horticulturist?

Mr. C. M. Loring: I think this is one of the most interesting papers I have heard since the session has begun. We know too little about our native shrubs. There are so many that could be used to advantage, that I wish the nurserymen would take them up. Mr. Nutter spoke of a small tree which is growing in our state that ought to be cultivated in every collection, and that is the mountain maple, the striped maple, or moss bush. I have tried several times to transplant the young tree or shrub but have never succeeded in making it live. I would like to know whether any one has succeeded in transplanting it successfully. Among the number that were mentioned by Mr. Nutter, some are as beautiful as any of the exotics. I wish the nurserymen would take up these things; I believe it would be a profitable investment for them.

Judge Moyer: I am glad Mr. Nutter spoke of the Viburnum, especially speaking of the Viburnum lantana, commonly known as the haw. It seems to me this is one of the best shrubs we have to plant. The shrub is sometimes called the sheepberry and sometimes the black haw. But I do not know of any shrub that does better. I am glad he spoke of the cacti. There is one cactus that grows at Ortonville. It has been cultivated, I understand, and they are growing it at Lake City. It is a very beautiful cactus with a bright red flower.

Mr. C. S. Harrison (Neb.): May I say just a word on this subject with regard to hardy ornamentals? I was very much disappointed this morning when the reports of the stations came in because there was nothing said about ornamentals. There was something said about the stomach but nothing about the soul. We have run up against this business now of ornamentation and beautifying the home. We ought not to ignore this subject; it has been ignored too much in this meeting, and so I want to chip in by and by. The ornamental part is the important part. I have studied this matter carefully. I went up to Manitoba last fall to know what was hardy and what was not hardy, and although there are some things which will not do well in the west, yet there are a great many things that will. There are one hundred and forty lilacs in that column that are triumphant here in Minnesota. There are twenty to thirty

spireas and as many kinds of syringas that will do as well, besides your native shrubs, and there is no reason why you should not make your homes beautiful and adorn your grounds, and there is nothing that can be of greater service to you than these things that the Lord raised. I have been surprised, and it opened my eyes, to see how much beauty is provided for us in the way of that little flower the phlox. I used to drive across these prairies, and I saw thousands of acres of this beautiful phlox. They took that native phlox over to England and made it as big as a quarter of a dollar, then as big as a half dollar, and now there are some as big as a dollar. There is a flower of the phlox that is larger than a dollar. What I say of the phlox is also true of the peony and other perennials. God planted them in great profusion. When we adorn our homes we put in a twenty-five dollar mirror and a fifty dollar rug, but we will not pay more than twenty-five cents to put anything in the front yard. Anything we put in the front yard increases in value, but anything we put in the house depreciates in value, but we put everything in furniture and nothing in the beautiful things that ought to grow in the front yard. (Applause.)

The Chairman: It is a perfect delight to hear Mr. Harrison talk on these matters. He has a fund of information on the subject that is simply marvelous, and I hope he may live to come to our meetings for many, many years.

MY SUCCESS IN CHECKING BLIGHT.

CHAS. W. SPICKERMAN, EXCELSIOR.

It is not my intention to dwell on the cause of blight, as I do not think the fruit growers in general care as much what causes blight as what to do for it when it makes its appearance. I am aware that a preventative would be the desirable thing, and we may be able to bring such a subject before the society later, but the thought to be presented in this article is, what to do for blight when it makes its appearance in the orchard.

I have observed: first, if it is ever so wet when the temperature is cool there will not be much blight; second, if it is very warm and is dry and has been dry for a few days previous to the heated term there will be a very small percentage of blight; but, third—to the contrary of the above two points—if we have a period of wet weather and then the temperature rises to 80° or 85° immediately following or at the same time, the vegetable grower will say “How things grow!”, but the apple grower can truly say “How the apple trees blight!” Plainly, in hot, dry seasons, not much blight; in hot, wet seasons, blight on nearly every variety of apple tree if in a blighting locality.

Under the above conditions after June 10th watch all your trees for blight, and if you notice that the ends of any of the limbs look drooping or wilted, take your knife and raise up the bark, and if the inner bark looks black cut the limb off as far down as the bark looks black where raised up from the wood. Sometimes the inner bark may be black a ways down a limb and of a brownish color for a ways farther down the limb, and in such cases it is not necessary to cut the limb off down below the brown color portion, as

CHAS. W. SPICKERMAN, EXCELSIOR.

many times the portion of the limb that has a brownish inner bark will recover.

Now as to the remedy: Take a knife and slit the bark open on the under side of the blighted limb, commencing where the limb is cut off or, if not off, where the inner bark ceases to be black, and run the cut down the full length of the limb to a big limb or to the body of the tree. If the tree shows much blight, slit the bark open down the body of the tree to the ground, and in very severe cases I would open the bark on two sides of the tree, being careful and not have two cuts come close together, If the blight shows on

the big limbs near the body or on the body of the tree, slit the bark open, beginning above the blighted place and running down through to the ground. Especially notice or watch these places, as they are susceptible to blight, and it is very damaging to the tree if it is blighted here. If blight shows in the top of the tree in several places, and the bark on the limbs or a part of the limbs is pale and soft looking, under which the inner bark looks brown or black in any little place, slit the bark open for two or three feet at least. Any one expecting success must not go at it half hearted. Open up the bark some distance, in bad cases open the bark in some portion of the tree nearly the whole length of the tree..

One very important point is to do this operation in time and not wait till the tree is dead. Any warm days after the 10th of June be on the watch, and if the remedy is kept in mind and applied properly and in time I think one need not lose a single tree entirely out of a thousand trees. In a very short time one will see a decided improvement in the appearance of the trees operated on. Also one may observe where the operation is done in time and properly, as the limb cut will not blight down any farther, and the whole tree will stop blighting at once. I have seen the bark spread apart one-eighth of an inch in twenty-four hours, but it soon heals over. However, the bark seems to spread more or less during the summer, sometimes one-half inch wide. I have a few specimens of limbs here the society may have the privilege of examining and any who wish to see the trees in the orchard and will call at my place I can show them 300 or 400 trees operated on this last summer with good results.

Mr. A. J. Philips (Wis.): What varieties were they?

Mr. Spickerman: Yellow Transparent and Wealthy.

Mr. Geo. L. Whiting (S. D.): Have you had any experience in blighting a couple of inches long in spots along the limb and the heart of the wood killed?

Mr. Spickerman: I have lots of them at my place. I saw summer before last where they were blighted in the crotch of the tree, a spot of blight as big as a finger or a hen's egg, two or three inches wide, and that was on the big limbs of the tree. If you make a cut right through the blighted place it will not blight any further around the tree. Of course, this must be done in time. You can't wait until the tree is dead or until that portion of the tree is dead.

Mr J. M. Underwood: In your estimation how does this act to stop the blight?

Mr. Spickerman: Well, it is only a theory, of course. This treatment is the result of a little experiment I tried for three years. Three years ago I first tried it; I tried it on two or three trees, that was all. Two years ago I tried it on fifty trees, and this year I tried it on the rest. I can show you cuts as wide as my finger on

a limb of two years' growth. I can show you another where it commenced to blight again, and I had to make another cut. I think this plan arrests it only while the blighting is going on.

Mr. Whiting: This cut should be made before the tree is entirely dead?

Mr. Spickerman: I said watch the tree, and when you see it drooping then cut it. It seems to give the tree a vent.

Mr. Whiting: Those spots appear on the side of the tree?

Mr. Spickerman: If you have a sharp eye you can tell when it begins to form, and by watching it you can tell how far it is blighted.

H. H. S. Rowell: Why do you want to give the tree a vent?

Mr. Spickerman: You can interpret that as you please. I know I have tried this, and it has proven itself a wonderful success in my orchard.

Mr. Rowell: In the consideration of this question it is always treated in the way of the removal of the symptom, but never as a disease. I think Mr. Spickerman has a remedy for the disease, but not a preventative.

Mr. Spickerman: I have not a preventative, and this is only a remedy when the blight has struck the tree.

Capt. A. H. Reed: I did not understand that he touched upon the theory of blight in his paper.

Mr. Spickerman: I have a theory in my own mind, but I do not think I had better talk about it here. I might say a word or two about it. In my opinion it is caused by the congested condition of the sap.

Mr. Busse: Those trees that were treated, were they affected in nearly the same spots on the limbs and trunks as where they were treated previously?

Mr. Spickerman: I cut them both years.

Mr. Busse: Previous to last season were they affected as much as any of the others in the same locality?

Mr. Spickerman: The trees blighted were in the same locality. I think the locality cuts a great big figure; at least, that is my opinion.

Mr. Brackett: How does Mr. Spickerman reconcile his idea with Mr. Cook's? Mr. Cook covers up his trees to let no air in and Mr. Spickerman provides a vent to let air in.

Mr. Spickerman: I cannot help the theory, but I can show you three or four hundred trees where the method worked successfully.

Capt. A. H. Reed: I want to say right here that I believe it is nonsense to argue or try to prove that blight on apple trees is caused by bugs, insects or by bacteria. If the apple tree puts forth more foliage than the roots can supply with sap food, you will have blight. If the tree gets an early and heavy growth, as it did in 1905, starting in May and putting out an immense foliage by June, the roots, in my opinion, cannot supply that foliage with food enough to keep all branches growing, consequently the tips wither, turn red, and it is called blight. My trees this year started early in June to blight and nearly every tree in my orchard blighted. April, May and June were exceedingly wet months, hence, an overgrowth of foliage which the roots could not supply, and as a

natural consequence blight ensued. An apple tree set on a north slope is less apt to blight than those set on a south slope because they grow slower and become hardier. The Transcendent is noted and condemned by many for its disposition to blight. My Transcendent trees blighted no worse this year than my Hibernals, Wealthys, Patten's Greenings, Peerless and other varieties.

Mr. Rolla Stubbs: As far as I have noticed it is worse on the Transcendent and the Wealthy, and, as a general thing, it occurs in two or three hours. I have noticed nearly every season that it comes during a hot, sultry spell of weather, in cloudy weather, when the conditions seem to be favorable to the production of blight. After a rain in warm weather, when the sun comes out hot, after the clouds have passed away, this blight comes on within two or three hours' time. It is so every season, and I have noticed it for more than twenty years. It almost always comes in one day's time on my place. I have noticed where there is plenty of circulation of air around the lake and on high elevations it will blight perhaps as badly as it will on low ground; so it is hard to say what causes it, but it seems to be in some way caused by sunshine. Back as far as 1850 and 1860 we never noticed anything of the blight, but since the trees have been cleared away, since the forests have been cut off, it seems to have grown much worse than it was in former years. I think that is the most important thing we have to look after in the apple business.

Capt. Reed: My trees commenced to blight in June and blighted until August.

The Chairman: The last man I am going to call on to discuss this subject of blight is Prof. Sandsten, the professor of horticulture at the Wisconsin University. He has had a great deal of experience, and no doubt he can tell us something interesting regarding the blight question.

Prof. E. P. Sandsten (Wis.): This subject is a very perplexing one. Doctors disagree, although I believe among scientific men the agreement as to the cause is quite complete. We all agree that it is due to a bacterial disease of which mention has been made, but so far we have found no remedy that is effective except cutting out the diseased part. The question of treatment is at best only a secondary one, and, as some one has said, the conditions under which the orchard is taken care of may induce blight, but I do not agree with the gentleman who said that high culture and rapid growth are conducive to blight, for I have seen apple trees growing in a pasture and making no more than a two-inch growth that were badly blighted. It is undoubtedly due to a bacterial disease that enters as described by the first gentleman, and the only way to combat it is to cut out the diseased portion, but in cutting it the knife must be disinfected, and it must be cut at least six inches below the affected portion. If you do not disinfect your knife you are apt to carry the disease to the next tree you cut. Cut six inches below the affected part and disinfect the knife in a weak solution of carbolic acid before you use it again.

THE MAN WHO SELLS THE NURSERY STOCK—FROM THE STANDPOINT OF HIS EMPLOYER.

E. W. REID, ST. PAUL.

This is quite a delicate subject to speak upon from the fact that we have so many nurserymen in the house this afternoon. I always think when it comes to talking about selling nursery stock about the little tale I heard regarding a salesman and a farmer who happened to be riding along the road together, and the salesman tried to get in his work for an order of trees.

"No," said the farmer, "I have been fooled often enough; when I buy trees again I am going to drive to the nursery and see them dug, and see that the south side of the tree is marked so I can set the trees the same way they stood before."

Well, they rode on, and when the salesman found he could not get an order for trees he approached the farmer on the subject of trading horses. It so happened that the farmer was a great hunter, which fact the salesman had learned in some way, so he said to him,

"You have a mighty good horse there, and I will trade it for this broncho I ride."

"What would I want with your broncho," the farmer said, "my horse is worth three times as much as your broncho."

"Yes," said the tree agent, "but my broncho has some good tricks; my broncho is a setter."

They rode on a little farther, and while they were still talking about the trade the broncho got down on his knees. The agent said,

"There is game around here; I know it."

They looked around a little and saw a rabbit sitting alongside the fence, and as soon as the rabbit started up the broncho rose to his feet. They went on a little farther, and the broncho did the same thing again. The farmer said,

"I didn't know that there was any game around here," but when they looked around a little they discovered a covey of quail near the road. The farmer was pretty much impressed, and as they rode on the broncho repeated his previous performance. The farmer said there was certainly no game around there, the agent said,

"It must have been those chickens scratching over there in the grain."

That was the third time, the farmer was convinced and traded his horse for the broncho. There was no question asked in regard to boot, it was an even swap. As they followed the road they came

to a stream which they had to cross, and the farmer being a little longer in the legs than the tree agent, raised his legs to avoid getting his feet wet. He happened to touch the flanks of the broncho, and down he went in the water. He called to the agent, who had already crossed to the other side, and said,

"What kind of game is he after now?"

"Oh," the agent replied, "he sets for suckers just the same as he does for game." (Great laughter.)

"As the twig is bent, the tree is inclined." A good up-to-date nurseryman seeing a crooked tree, either trims its branches or cuts it out, and thus removes the unsightly. Carry this into your business and see how it works. A salesman to sell nursery stock and be successful, it is often said, must be crooked. Gentlemen, I cannot agree with you on this point, for there is no firm that is going to pay out good cash knowingly to a salesman who they know is not doing a straightforward business. Where does the blame rest? Oftentimes with the employer. You employ men to work, you furnish them the tools and instruct them how they must secure business, but how many of you instruct your men that they should sell stock that will benefit the planter, encourage him to extend his planting and thus create a demand? Many of us look only for today and keep pumping into our salesmen hot air until they care not what is sold, if they are only successful in getting the signature attached to an order. Some are even so eager that this is no temptation. What we should try and instil into our men is knowledge, have them visit the nursery, give them lessons how to instruct patrons, get their confidence in this way, rather than have them classed as "gold brick" venders. Gentlemen, this class of trade is doing more to disrupt our business than anything else, and a firm that will permit its men to take orders in such a way is to be classed with them.

True, the silver-tongued tree-man has done much good, he has caused many an orchard to be planted by his stay over night—and it is just this point I want to impress upon you: it is equally as easy to sell varieties and furnish stock that will prove of value as to sell stock that is of no value. Instil in your men the value of knowledge, what is best suited and most profitable to plant. Do not, because you have a surplus, urge them to sell what will be of no value, but try and create a demand. An illustration: You are aware that in our own state there is being sold each year thousands of trees that are of no value, coming from other states, such as Illinois, Ohio, Iowa, Nebraska, etc. They send men to canvass and take orders for stock which is not hardy, they sell Baldwin apples,

Black Tartarian cherries, Bartlett pears and many other things, because their platebooks are made up of such plates—and it is what a man talks he sells. Hence, if you educate your men and put the proper tools in their hands, they will take orders for stock that is of value to the planter. Instil into them the value of the Minnesota product. Create the demand and point out the way for them to secure business that is lasting, that they can go back year after year and secure business in the same territory.

On the other hand, you may have only the thought of today and have no reputation at stake, the same as the unscrupulous tree dealer who takes orders for Russian olive because they are hardy, and finds when he is ready to pack they are a short crop and cannot be had—still the orders have been taken and are on good people. What is to be done? I have heard that some have packed yellow locust. This personality is one to be feared by planters of trees, and it is he whom planters should guard against. It is he who has wrought the great injustice, and we as nurserymen must take the blame. This same dealer has nothing to sell but can supply anything from A to Z. He usually talks that which shows greatest profit, not knowing the market until ready to pack, and how often he finds varieties sold short and not to be had! He usually buys where a dollar will purchase the largest quantity, not quality.

Many illustrations could be cited in this way. When in the east, the writer knew of a dealer who was ready to pack and had sold a great many of Campbell's Early grape. They were new, and the retail price was \$1.50 each, the wholesale, 75 cents each; Wordens were used instead at the cost of three cents each. His argument was, "I never expect to see these people again, and they do not know the difference." One party had bought many sweet apples. In packing the trees were placed in trenches, and two men given him to run his sales. Going there later on, when the packing was being done, I heard one of the men say, "Here is a tag for fifty sweet apple trees, and none left, give him those," (pointing to a quantity that still remained). "It all depends on what kind of soil they are planted, whether they are sweet or sour."

Another illustration relates to how eager we are to secure deliverymen. You know that in many cases he is just as essential as a good salesman. The delivery was ready, the trees arranged, so that they would be handy when the rush came. The deliveryman had the list gone over by a merchant, and going down the list found "Sam Smith." "Here is one you will have trouble with, Smith won't pay." His order was for \$30.00—the first thorn. He began to

worry, "What was to be done with Smith's order?" Every one that called was apprised of the order that would be sold cheap, and so it could be distinguished from the others a blue pencil was used with the letters, N. G. in large size across the face of the tag. Along in the afternoon, when the rush was on, he noticed a man going along the trenches looking at each bundle carefully and examining each tag. When the deliveryman approached him, "Can I do anything for you?" "Don't know, guess I have some trees here." (Going over his book.) "What is your name?" "Sam Smith." "Oh yes, Mr. Smith, I have some trees for you. I noticed your order when we were packing, saw it was the largest order in the delivery, and I personally selected you the finest lot of trees in the nursery. See, here they are. Just look how straight each tree and perfect the head, and such a root system cannot be had." Smith was not able to get in a word but was looking closely at the trees, also at the others, and at last he noticed the letters, N G. on the tag. "What does this mean?" enquired Smith, "I do not see it on any other bundle." "I'll tell you, Mr. Smith, how I came to put those letters, N G, on the card. When we were packing I instructed the boys to put in each package three gooseberries, as a gift, and as I personally selected your order and was out longer in getting it ready to pack the boys informed me on my return they had no more gooseberries, so there are no gooseberries in this package. I went out and dug a dozen of currants, which are here," pointing at a package with a lost tag.

No other vocation surpasses that of tree-men in possibilities and surely none other in antiquity. From that very remote date when Adam was lured by the beguilement of Eve into tasting the forbidden fruit down to a more recent date when Jeff Davis was to hang to a sour apple tree, the fruit and fruit trees of the earth have been largely identified with its history—and have exercised a good part in shaping its destiny.

Would it not be curious as well as interesting to have some noted theologian try to determine just what effect it would have had upon the human race had the apple of which Adam partook been a juicy Yellow Transparent or a crisp Patten's Greening sprayed with arsenites and copper sulphate, instead of that sour crabby *Pyrus baccata*. Had it been possible for some fruit-tree agent to have existed, who could with the assurance of his class gotten as much as one foot inside the garden gate, then I feel sure no human power could have expelled him until by the aid of his soft sounding phrases, his sweet scented voice—in addition to the showy plate book, he had succeeded in stocking the garden of Eden with all the

choicest fruits earth could afford. Lamentable as the facts may seem, there is every reason to believe that those early inhabitants were not privileged to enjoy the society of the gay and instructive tree-agent of today, but that he is a product of a much later age. Some would insist that he came to live after the Christian era. But, leaving the date of his origin, the important fact is that for many hundreds of years the fruit tree has been given great attention, but it has only been in recent years so much attention has been given it.

Contrast, if you can, today with the past, and you may draw partial pictures, but you can never plant the real facts. Largely through our instrumentality and that of our salesmen, the laborer of today can dine off delicious fruits that but a few years ago were esteemed as luxuries only to be served in the palaces of the rich. Today the king at his royal table and the laborer from his tin pail enjoy alike the Elberta peach and the Campbell's Early grape. Warriors have not done half such deeds, and their names are handed down from generation to generation, but the poor humble tree-man can never attain this topmost rung of notoriety, but must pass from the present into the future, lay down the platebook, hang up the hoe and go to the place all good tree-men go.

A CONCRETE FRUIT STORAGE HOUSE.

A. BRACKETT, EXCELSIOR.

We are all aware that the nearer we keep an apple, so far as both moisture and temperature are concerned, at an even degree the better it will keep, and the freer we keep it from any contact with decaying wood, paper or anything of that sort the better the apple will retain its flavor. I have here a sample of a "gold brick." It is not the kind we usually read about, but it is a gold brick to the man who wishes to build a house in which to store his fruit. It is a concrete brick made of sand and cement, and it is something that any man can make himself if he has sand, and it takes "sand" to do almost anything. If you will build a wall of this brick, in layers two inches apart, making a ten inch wall with an air space of two inches, no moisture or frost can pass through, and you will have a cellar that will last a thousand years and in which you can store almost anything. If you want to make it perfectly safe so there will be no danger of frost passing through in this severe climate, make a wall 16 inches thick with two air spaces. Put in a cement floor. For a flat roof lay a false floor and then lay iron rods across to reinforce the cement, and on this false floor put from four to six inches of cement, and you have a roof for your cellar, or if you want to put a building on top you can do so and use it for a packing house. In such a house you will have room for a large crop of apples and other fruit, and no fire will ever burn it up.

Mr. Philips: How large are the rods you use?

Mr. Brackett: They are half inch iron rods.

Secretary's Corner.

MEMBERSHIP AUG. 4TH.—Annual members, 1993; life members, 171; total, 2164.

PREMIUMS FOR CANNED PLUMS.—The attention of our members is again called to the five valuable premiums offered to exhibitors of canned Minnesota plums, the exhibit to be accompanied by the recipe for canning same, to be made at the next winter meeting of the society. Full details as to this special feature of exhibit at the meeting are to be found on page 240 of the June issue of this magazine. Please refer at once back to this and read again the particulars as to this offer. We hope to secure a number of valuable recipes thereby, and competition is open as usual to any one in the state.

CANNING FACTORY AT LONG LAKE.—A company has been organized amongst the fruit growers connected with the Lake Minnetonka Fruit Growers' Association, and a canning factory built at that place, which is now in successful operation. Such an outlet for surplus fruits has been found indispensable in connection with the successful operation of any large fruit growers' association. It takes care of the surplus crop at a reasonable price, when it might otherwise be, in many cases, an almost total loss to the growers. We shall watch the operation of this new business enterprise, it being near us here, with interest and expect to hear of its proving a valuable accessory to the large fruit growing industry now developing on the north shore of Lake Minnetonka.

FRUIT EXHIBIT AT THE COMING STATE FAIR.—What are you planning to exhibit at that time? There will be room for four or five thousand plates of fruit, and we rely on the fidelity of our members in the work of the horticultural society to see that every inch of the space is taken. A satisfactory premium list and the pleasure as well as profit growing out of competition there, ought to make it easy this year, as it has been in the past, to keep up to the maximum our fruit display. As superintendent in charge of the fruit display, the secretary is especially interested that this should be so and would like to hear from any who are contemplating exhibiting at that time and especially if they have not heretofore exhibited fruit at the state fair.

\$100 FOR A PLUM SEEDLING.—On page 280 of the last annual report of this society, that for 1905, will be found the offer made by Mr. Chas. M. Loring, of Minneapolis, of \$100 for a new seedling plum and the conditions pertaining thereto. Only one entry was made for this premium last year, but it is hoped that this early notice will bring out a number of entries and that some one of them will succeed in capturing the \$100. The prize has not been hung so high as to be out of the reach of some extra good seedling, that may be even now growing and fruiting in Minnesota. Competition is not confined to Minnesota by these conditions, but the tree producing the fruit "must be hardy in Minnesota." Entries for this premium should be made with the secretary, and directions will be sent by him as to where the fruit is to go for testing, or if the time is too short for correspondence it may be sent at once to the secretary. Who is to take this prize?

HORTICULTURAL HALL, HOME OF THE MASSACHUSETTS SOCIETY.—The secretary had the pleasure of visiting in July the newly erected home belonging to the Massachusetts Horticultural Society. This association is not a state horticultural society in exactly the same sense as the Minnesota society, though it does receive aid from the state in the way of some premium money to be offered for certain purposes. The Massachusetts society has a home costing \$295,000, on ground costing \$225,000, but as they had recently sold the site of the original home belonging to the society for a considerable larger amount than the two above named sums combined it was not difficult to make this splendid investment. The building contains a very large exhibit room two stories high, lighted through the roof in part; a magnificent room for the meetings of the society; on the third floor one of the finest libraries the secretary has seen, containing probably the largest assortment of horticultural literature in America; the secretary and treasurer have their offices, and other necessary apartments are to be found, on that floor also. We did not envy the Massachusetts society but look forward with interest to the time when the Minnesota society can take unto itself also an equally desirable habitation. When and where will that be?

DEATH OF H. G. ACKLIN.—Mr H. G. Acklin, of St. Paul, passed away early in May, the exact date being not now known to the writer. He had been a member of the horticultural society for many years and while especially interested in beekeeping was also a very regular attendant at the meetings of the horticultural society and a loyal member. He will be especially missed in the beekeepers' association, in the deliberations of which society he occupied a prominent part.

DEATH OF JONATHAN FREEMAN.—The death of this well known and useful member of our society occurred unexpectedly at Grand Junction, Colo., where Mr. Freeman was temporarily staying. He passed away on July 5th after a brief illness of typhoid fever. Mr. Freeman was a resident of Austin, in this state. For some time he officiated as secretary of the Southern Minnesota Society, and later was elected one of the vice-presidents of the state society, meeting with us at the annual state gathering a number of times. He was very much interested in the horticultural development of the state and showed his love for the work in every possible way. We regret that his name is so soon added to the long roll of those who have passed on. We hope to be able to publish a biography of Mr. Freeman in a later issue.

DEATH OF O. M. LORD.—Mr Lord passed quietly away to his reward on the 21st of April. His death has been for some time expected, as his health had been failing gradually for a number of years. To the last he maintained his interest in the society and its work as expressed in many ways. His death occurred at his home in Minnesota City, near Winona, on the place where he has passed so many years of his long life of upwards of eighty years and where his experiments in fruit and flower culture were conducted. Mr. Lord's wife died sometime since, and as the remaining members of his family are widely scattered it is thought likely that the place will go into the hands of strangers, but though we may not continue to receive the results of Mr. Lord's work there, yet what he has accomplished as recorded in our reports is an invaluable contribution to experimental literature in the Northeast. A fuller reference to his decease may be looked for later.

VIEW OF CASS LAKE FROM HIGH GROUND.

THE MINNESOTA HORTICULTURIST.

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THE MAKING OF NORTHERN MINNESOTA A GREAT AND POPULOUS COUNTRY.

GEO. H. MAXWELL, CHICAGO.

National Irrigation Association.

Mr. President, Ladies and Gentlemen:

I am afraid from the introduction I have had by one of the ladies who has spoken before me that you may have formed the opinion that I am a very dangerous individual. I must confess that when I spoke at the forestry congress at Washington last January I was filled with a good deal of indignation that may have made my address there appear more lurid than it otherwise might have seemed.

I have not come here in any spirit of antagonism or aggressiveness at all. I have come more in the spirit to which the Good Book refers when it says: "Come, let us reason together." It seems to me if the people of Minnesota can be made to see this question of forestry in the light of the broad relation it holds to the welfare of the people of the whole state, that instead of any movement existing in Minnesota to reduce the area devoted to permanent forest culture—because that is after all what the reserve is and nothing else—they would immediately begin a movement to increase the area.

I have heard the statement made—and I have never seen it contradicted—it was made by Mr. Deffelbaugh, the secretary of the American Lumbermen's Association, at the Trans-Mississippi Commercial Congress, at Seattle, that as we are going on at present in this country, sweeping away our forests in order to supply the commercial demand for wood and timber, unless a system of replanting is adopted throughout the nation forty years from to-day we will have exhausted our supply of wood and timber.

That means something more than the exhaustion of a source of commercial prosperity. It means something more than as though you had underneath the soil of Minnesota a mine of some valuable mineral which you might exhaust and still leave the earth useful for agricultural purposes.

It is something to which few men, except students, have given much thought, but the fact is that more deserts may yet be formed on the surface of the earth, and that there are at present enormous areas of country in Asia and Africa where, in times gone by yet clearly within the records of history, there were thriving and populous nations. Today they are nothing but deserts and swamps. You are all familiar with the conditions on the plains of Mesopotamia, where Babylon of old existed in the midst of its multiplied millions, and where to-day the hyena and the jackal, the tiger and the lion, prowl at night through the swamps and over the desert, and where a human foot is rarely set, and where no human sound mingles with the cries of the wild animals. How many are there in this state who have taken it seriously into consideration that if the people of Minnesota are not more wise in their day and generation than were the people of those ancient lands you may destroy all your forests and wear out your soil and eventually reduce this magnificent state of Minnesota to a desert of sand, depopulated and uninhabited.

That is a strong statement, but it is nothing but what is true. The soil of this state over an immense portion of its area is not a strong soil. It is not a soil that will stand up year after year under continuous cropping without fertilization and keep on producing. You do not have to go to Asia or to Africa to find lands that are practically worn out and useless to-day; you find them in many old settled portions of our own United States.

Now I want to talk to you today about a subject that is near all your hearts, but I want it understood that I speak of it in an argumentative sense and in the hope, possibly a futile one, but in the hope, that if there are here today gentlemen from northern Minnesota who are interested in the development of that portion of this great state, that they may be willing to take up that magnificent work along the right lines and make of northern Minnesota a great and populous country, instead of developing it along lines which will deteriorate it and in the end possibly put large areas of it back to a desert. (Applause.)

You take that great country up there,—and I will speak of

it now without regard to the forest reserve with all that lace-work of beautiful lakes, and with its miles of swamp lands and large areas of very light sandy soil. The proposition is now to drain all that land, if I am right in my understanding of it. I believe I saw in a paper that 11,000,000 acres of land could be drained and the land made available for agriculture. I am not here to warn you against draining it. I am here to warn you against draining the sandy land by wrong methods. There is a way that sandy land can be drained and devoted to agriculture wherever it is best that it should be so done, but it should be accomplished in the right way.

In the first place, you can never get the national government through its law making body to spend the money of the whole people of the United States to drain those lands that drain into the Mississippi, as they have drained the swamps of Indiana and turned that water down into the Mississippi river. A portion of it, at least, would go into the Mississippi river, and we all know that the residents of the lower Mississippi valley are living along that river under the shadow of those great levees in mortal terror of their lives and property with every new, great flood that comes and crawls an inch higher up on the levee than the last flood did.

Why is it that there is a steady rise in the flood plain of the Mississippi river? One of the chief reasons is that in the early history of the country the enormous area of territory which drained into that river was a grass covered region or a forest covered region or a great swamp region, as it was originally through Indiana and a large part of Illinois, and when the rains came the swamps, the matted grass, the great, spreading trees and the underbrush held back to a great extent the water; today it flows uninterruptedly into the river, and the volume of those floods is immeasurably increased.

Now they have waked up to the fact in the lower Mississippi valley that if they ever expect to live in safety on the plantations and in the cities and villages that line the lower reaches of the Mississippi river the problem as a whole must be solved by the national government and the states in co-operation along a great, broad national policy which will recognize the fact that there is a broader, a better and a higher reason upon which to place the building of levees and the planting of forests than the mere question of navigation; that it involves the question of the extension and maintenance of the agricultural area of the country, which is the cause of all of our prosperity, and

that if you are going to solve that question at all you must solve it as you would if you stood at the mouth of the Father of Waters at its highest flood, looking up that river and realizing that the great volume of water that comes down that stream had its source originally in million upon million and millions upon millions of little, trickling streams that had their birth in the drops of rain that fell from the heavens, and if you are going to control the floods you must go back to where the rain-drops fall and hold back those drops. (Applause.)

You must do it, for one thing and as one way, by an enormous and comprehensive system of tree planting. And there is more than that reason for planting trees. Trees will not only make great artificial reservoirs to hold back the flood waters from all the lower rivers, but they will supply our commercial needs and regulate the flow of the tributaries of that river. Let that broad idea once find lodgement in the public mind, and the people of the whole Mississippi Valley and all its tributaries, from the Alleghenies to the Rocky Mountains and from Canada to the Gulf of Mexico, will realize that there is one problem that the people of Minnesota and the people of Mississippi should clasp hands on, and that is, that we should plant those vast new forests and should bring under successful cultivation every possible acre of land that can be used for making homes for farmers (applause), and, as a result of doing so, that we can control the whole volume of the floods. If we go at it that way we will have the people of this country doing it with the same determination to overcome any obstacle that they are showing in the digging of the Panama Canal.

When the American people grasp a great national ideal, obstacles only stimulate them to higher action, and it would be so with that great problem. The difficulty has been that the problem has been sectionalized. The plantation owner in Mississippi thought he needed nothing but a levee, the owner of swamp land in Illinois thought he needed nothing but a ditch and today the owners of swamp lands in northern Minnesota draining into the Mississippi who are interested in its development think of nothing but local interests.

Now, my good friends, let me say this to you: I came into this forestry and irrigation work from the west, California being my native state, and the national irrigation movement made no important growth until the last six or seven years. For more than a quarter of a century the people of the west, from one section

or another, went to Congress with petitions for appropriations to aid irrigation, and they failed every time, and they never had the slightest shadow of success until the time came that the national irrigation movement was projected right into the eastern part of the country, and it was made clear to the merchants and manufacturers and to the great industrial institutions in this eastern country that every dollar spent for irrigation would bring another dollar into the arteries of commerce and that every man practically would be benefited. The moment the American people grasped that idea, national irrigation was assured. (Applause.)

I say to you that whenever the people of northern Minnesota grasp that broad, national idea of reclamation, it will not be a question of making the town of Cass Lake grow, but it will be a question of making the United States a greater nation. (Applause.) Then, and not until then, will the national government extend to you a helping hand in the reclamation of the swamps of northern Minnesota. When you get national help you will get it not only because you are going to demonstrate that large areas of these lands are capable of being turned to agricultural use; you will get it because you will also pledge yourselves that you will establish a great, permanent natural reservoir that will add ten times the amount of acreage to the forest reserves than exist in Minnesota today. (Applause.) In this state, where lumbering is one of the great industries, you ought to be today planning through the national government the means of growing timber in your state to be harvested in a comparatively few years to come by the active men who will then be working in the interests of lumbering. Your cut-over forest lands should be replanted and not allowed to be cut off and go back to a sand barren. Lumbering in this state should be looked upon as a permanent industry, just as much as the growing of a crop of barley, wheat, oats and corn, and the harvesting of those crops today. You should plant forest plantations in different places throughout the state of sufficient area to eventually supply all the needs of the people of your state for wood and timber through all the years to come. It will take longer to raise a tree than it will a stalk of corn, but it will grow to maturity just the same.

This is a serious matter. If you will go over a map of Minnesota you will find that probably one-fifth of the total area of this state (which I understand is about 85,000,000 acres) is

better adapted to permanent forest culture than to any other use to which it could be devoted.

The question in this state today—and the people of the entire country are going to see it in a few years—is a question not of one little reserve up here in northern Minnesota being preserved, it is a question of planting many millions of acres of new forest to be harvested from year to year, beginning as soon as it is grown to maturity, in order to supply the enormous and increasing demand for lumber that is going on by reason of the rapid development of our country. Instead of trying to get forest reserves in Minnesota opened, the thing to do is to get some more of them created and planted. (Applause.) You do not need to put them all in one place, you do not need to put them all around one town; let them be divided here and there among many places, because that is the only way to preserve the lumber industry.

The forest question in this state has a different aspect than it has in the country whence I come. You can cut off a forest in Minnesota, and if the land goes back to a desert after a few years of cultivation it only affects one community, and a community not commercially connected with it might not be affected by it to any great extent. On the other hand, I come from a state where, over a great area of that state, absolute destruction will follow of all interests if the trees on the mountains which conserve the water supply for irrigation are destroyed.

We have in California trees that were great trees when Christ was on earth, and there is a romantic reason for preserving them which is entirely separate and apart from commerce and agriculture. With you the question of tree planting is a question which should be treated with a cool, calm, dispassionate and unprejudiced mind, as it involves one of the great industrial problems of your state.

I want to point out to you the unwisdom of reclaiming some of your sandy lands by drainage in the ordinary way. If you put in a system of open ditches in that country, as they are doing in parts of Minnesota today, and as they are doing in a great many places in the Mississippi valley today in draining swamps into the river, what will be the result? If you drain the sandy land out in that way, lower the water table down as far as you would probably have to do to drain those overflowed lands and turn them into farms, you may lower the water table to a point where you have nothing but the surface fertility to depend on,

and in a few years that will be exhausted, and the country will go back to an irreclaimable desert.

On the other hand, if you will go into that country and, wherever it is practical, instead of draining it out, preserve every lake that is there as a natural reservoir, and put hydraulic dredges out into the lakes and into the shallow swamps, and pump the sand and silt out of the bottom, that is to a greater or less extent vegetable matter, pump it out on lands that can be raised to a point so they may be cultivated, after being protected by a low levee, but never lowering the water table below a point where capillary attraction will draw moisture up to the roots of growing crops, you can reclaim a good many thousands of acres in that northern country by a combination of irrigation and drainage and intensive cultivation and fertilization of small farms.

If you have never seen those hydraulic dredges work you do not realize what I mean. They run a great, long pipe way out into the water and the dredge draws up the sand and discharges it out on the land. That may be a slow process of reclamation. It would be a great big scheme that you cannot carry through in two or three years, but it will reclaim the land faster than you can find good gardeners to cultivate it. (Laughter and applause.) You establish a combined system of drainage and irrigation and open a small farm system, where you can develop a community of intensive farmers raising a crop on ten acres, farming as they do in Germany, Belgium, Japan and France, where ten acres will produce more than one hundred acres in northern Minnesota today, and the small farmer with that kind of farming can afford to irrigate, can afford intensive cultivation, can afford to fertilize, where the man with 160 acres of land cultivated according to our American ideas will fail every time. Somebody will say we do not get our gardeners from France, but a few hours ago I was talking to 500 students over at your farm school who will solve this problem.

You want forests, and you want agricultural lands in this country; you want all kinds of prosperity, and you want all kinds of splendid institutions; but I tell you the thing you need the most, and ought to make the greatest effort to get, is the men and women who know how to farm a small piece of land and make a home and build up a rural community. (Applause.) They are the foundation of your social and political structure, and until your plans for the development of your magnificent state contemplate such a training of the children as will teach

them the way of solving this problem, you are taking serious chances that in future years the jackals and hyenas will prowl in the sand wastes of Minnesota.

I want to make one more comment on a case like this Win-nibigoshish reservoir. I was very much disappointed, as one not interested in a local way, that the movement for the development of a national park there was not carried actively forward after the passage of the Morris bill. I was reading only a few days ago in Munsey's about the enormous amount of money—it runs through my mind that it was \$40,000,000—that was brought into France in a very short time by reason of the fact that they encourage automobiling in France, and it has proved to be one of the great sources of prosperity of the French nation. If the people of Cass Lake who are interested in the development of that country would give up the idea of cutting off all those trees for the benefit of a few timber speculators, who look into the future only a few years, would give up the idea of selling town lots today, and go into the business of developing a great pleasure resort, and instead of going to congress with a drainage bill would go there with a good roads bill and ask congress for an appropriation for a great automobile highway from St. Paul to Cass Lake (applause), and lay out that park with a series of splendid roads where any automobile would be free to go because it would be the custom of the country that automobiles should go there, you would have automobilists from all over the world going to Cass Lake, and make it a great tourist resort. They would not sell their town lots for today's prices, because in five years from now they would be worth ten times as much as they are now. (Applause.)

I hope you will take this matter to heart as a matter affecting not only your state but the whole country, and pray with those people at Cass Lake to get right on this question, and receive them with open arms when they do, because "there is more joy in heaven over one sinner that repenteth than over the ninety-nine that are saved." (Great laughter and applause.)

THE NATIONAL AND MINNESOTA'S FOREST RESERVE

MRS. LYDIA PHILLIPS WILLIAMS, MINNEAPOLIS.

Mr. President and members of the Forestry Association:

"Peace hath her victories no less renowned than war."

In the annals of forestry, 1905 shall wear her crown of oak and laurel, for conservative forestry has captured the public ear of the country. The Forestry Congress whose delegates paid their respects, on New Year's Day, in Washington, to the chiefest forester and greatest hero of peace in all the land, Pres. Roosevelt, marks a change in the history of forestry and was epoch making—as we recall the personnel of that convention and the inspiring address of the President in which he said:

"The great significance of this congress comes from the fact that henceforth the movement for the conservative use of the forest is to come mainly from within, not from without; from the men who are actively interested in the use of the forest in one way or another even more than from those whose interest is philanthropic and general. The difference means to a large extent the difference between mere agitation and actual execution, between the hope of accomplishment and the thing done."

Yes, as we recall the thrill of hope that alternated with a pang of pain as the French ambassador touched with his Damascus blade the tender spot of America's wasteful methods in contrast with France's conservative policy, which had even said to the sands of the sea "thus far shall thou come and no farther," and the band struck up "The Marseillaise," we confess to being in the temper of Edward Everett Hale, whose sentiment bubbled over at the congress and he exclaimed: "Mr. Chairman, I should be glad to speak for twelve minutes or twelve hours, anywhere and any time, to anybody interested in forestry. I used to visit a forest in New Hampshire in 1841 where stood beautiful pine trees through whose branches the wind souged when Columbus discovered America and whose trunks still bore King George's mark upon them—the broad arrow of the English. I went up to this same region two years ago, and all my beautiful pine trees were gone, and in their place was nothing but sumac and blackberry bushes.

"Now, we are asking congress to preserve the forests for fifty square miles in that region. I desire that my boy's boy's boy's girls, two centuries hence, shall see such trees as I saw in 1841."

The remarkable and surprising feature of the Forestry Congress was that, for the first time in the history of forestry, all the great commercial and industrial interests of the country were represented by delegates advocating conservative forestry. The forest lover and the forest user, the lumberman, the railroad manager and the agriculturist, found themselves belonging to the same fraternity and holding a common faith. Mr. Deffelbaugh, of "The American Lumberman," who addressed the convention upon "The changed attitude of lumbermen toward forestry," said: "The character and diversity of the assembly reminds me of the little girl who said: 'Papa, where were you born?' 'In California, my dear.' 'And where was mamma born?' 'In Massachusetts, my dear.' 'And where was I born?' 'In Philadelphia, my dear.' 'Well,' she continued, 'isn't it wonderful how we all got together?'"

There was Mr. John A. M'Cann who said:

"It requires a rare quality of courage for the editor and owner of a trade paper which for twenty years has labored in the cooperage field to come here for the purpose of offering congratulations on the fact that we have a forestry department today, the purpose of which is the reforestation of the land that we of the cooperage industry have religiously, persistently and outrageously helped to devastate, destroy and lay waste. I am here, however, for that very purpose, and primed with the thought that

'While the light holds out to burn,

The vilest sinner may return,'

and we cooperage stock people surely are sinners of the vilest description.

"As though in pursuit of the most lofty ambition, we have, for years, gone at the destruction of two of the noblest specimens of the American forest, the *white oak* and the *American elm*, and followed them so relentlessly that the end of both is well in sight, unless the forestry department or the government will stay the hand of the stave man, do something to repair his wastefulness or satisfy his rapacity with other wood of which there is greater abundance.

"It may be news to many of those within the sound of my voice that grades of *white oak* which are welcomed by the *furniture factories* of Grand Rapids and elsewhere for furniture making would be rejected by the *maker* of the *whisky barrel*, and that elm suitable for the *interior finish* of a *luxurious home* would not always do for a *Minneapolis flour barrel*. We, of the cooperage fraternity, are both finicky and fastidious, but it is earnestly to be hoped that under the operation and influence of the department of forestry, or the legislation which will follow its recommendations, some of this fastidiousness may be taken out of us.

"As far back as I have any knowledge, white oak has been, and is today, the chief dependence of the tight barrel cooper. I mean

those who manufacture barrels for *whisky, wine, oil, alcohol, turpentine* and other liquids. All of these seem to demand and require white oak of the finest grade, and the part of the tree which they deem fit for their purpose is its least part. The greater part up to recent years has been thrown aside to rot and breed a very destructive species of worm, or else has been thrown into heaps and burned. I feel that I am well within the bounds of truth and reason when I say that if all the white oak which has been wasted during the past fifty years could have been sawed and sold at its present value, it would have been enough to pay for the Panama Canal—or, possibly, pay off the national debt."

President Elliot, of the Northern Pacific Railroad, emphasized the enormous consumption of timber for cross ties. He stated that it requires the forest product of 500,000 acres annually to supply cross ties alone, and that the entire consumption of timber by the railroads requires the product of 1,000,000 acres per annum. He urged farmers and land companies to plant trees for cross ties.

One of the most touching addresses was made by Col. Emerson, of the state of Washington. It almost brought tears to our eyes as he described the wasteful methods of the lumbermen on the Pacific Slope and the fall of those mighty monarchs of the forest. He said:

"In the home of the fir, the spruce and the cedar, the song of the axe, the saw and the hammer begins with the dawn and rests only with the close of the day. Go where you will the crop of the centuries is being harvested. With each breath a monarch of the forest falls. Engines whistle to engines, as the huge trunks of these noble trees are dragged to the water or to the railroad; the locomotive whistles to the mill as it comes with long trains of the wealth of our forests, and the mill whistles back to the locomotive as its saws sing while they work. Steamers for coastwise and trains for eastern markets whistle back to the mill as they hasten with its product; the deep loaded ship spreads its sails and the winds waft our lumber to the far corners of the earth. In all ways the harvest goes merrily on, and the song of the axe, the saw and the hammer, are sweet to the ears of our people, for they sing of industry, prosperity and happy homes.

"But is there no other note in the song? Do these people ever think of the centuries their crop has been growing? Does it never occur to them they are the trustees of an heritage for future generations, to be guarded, cared for and watched, used from sparingly as necessity requires or price justifies, but not to be wantonly wasted or destroyed, or disposed of without adequate returns?"

This gospel from the lips of a lumberman sounded strangely sweet in our ears!

Mr. Weyerhauser, of Minnesota, in his address before the congress stated that "observation forces upon us the fact that the

forests will reproduce themselves if given a fair chance," and declared, "the wise and moderate regulations requiring the burning of slashings and trimmings on Leech Lake Reservation are a complete success and a splendid object lesson."

A letter to the convention from James J. Hill contained this statement: "Irrigation and forestry are the two subjects which are to have a greater effect on the future prosperity of the United States than any other public question, either within or without Congress."

That convention also passed the following resolution:

"Resolved, that we protest against the attempt to reduce the area of the Minnesota National Forest Reserve and against any step which would enhance the difficulty of the perpetuation of the forests upon it."

This reserve is again placed in jeopardy—and we have a paramount issue!! Through the action of its enemies, it is expected the decisive struggle as to whether the "Morris Act" or the "Nelson Law" shall prevail is to be fought out in Congress this winter. A crucial time!

Forestry friends, were they disposed, have not the where-with-all to tip their arguments with silver or make promissory appeals to the press and congressmen—but we can a "plain, unvarnished tale unfold" that shall as clearly set forth the real motive of the opposition as the lime light of "frenzied finance" portrays the devious methods of the insurance companies or the "bulls and bears" of Wall Street.

The same selfish private interests that were discovered, at the public hearing in September, to be back of most of the agitation to have the government abandon the Winnibigoshish reservoirs, which have cost the nation hundreds of thousands of dollars, are the same interests that are seeking the repeal of the Morris Act.

The opposition has unremittingly, through misrepresentation to the Indians, through the public press and before the legislature, labored to bring about the repeal of the Morris Act and overthrow our reserve.

You will recall that the Morris Act was a compromise measure, and the friends of forestry yielded at the time, like the "Japs," for the sake of peace more than in justice they ought, but so quickly did the opponents of the reserve "break faith" that we seriously question if in the beginning they honestly entered into the compact and expected to keep it or if they only accepted it to gain time.

In Washington, last winter, the friends of forestry through alertness and hard work checkmated the enemy in their efforts to introduce a bill to nullify the present law. Repulsed in this direction, they then made a covert attack in the home legislature at St. Paul, on the 66th day of the session, April 4th, and slid through a resolution requesting our senators and representatives in Washington to urge the repeal of the Morris Act the coming winter. The repeal of the present law would reinstate the old Nelson Act and again make operative the vicious "dead and down" provision, which offers a premium to the wards of this nation and to the lawless to set fires on the reserve.

I am prepared to tell you that fire has been set again and again on the reserve, and some of the best white pine and Norway was fired at the roots to bring the timber within the "dead and down" act, some that was splendid, sound timber. The U. S. commissioner

would simply see the stump, with the burning below the chopping off point. In 1900 I had the opportunity of seeing with my own eyes where such burning had been committed, selected trees, perhaps as fine as any that ever grew, which stood over on the bluff opposite Walker, burned with the aid of a lamp. That is the result of the "dead and down" law.

How, you ask, was this resolution passed? Your chairman would reply that the resolution was evidently drawn "to deceive the elect" if possible.

The real motives for the opening of the reserve were cleverly concealed and solicitude for the poor Indian strongly emphasized. The opposition posing as the Indian's friend and in the same breath urging a return to the Nelson Law, under which the Indians were robbed and demoralized, is as suggestive as paradoxical, but the role assumed, in the absence of those familiar with the history of reserve affairs, served their purpose.

It had not occurred to the friends of forestry that the legislature could be so blinded as to revoke its action after the law had been tested and found to be a greater success than had even been hoped for by its friends.

The Indians have received under the Morris Act, more than three times as much for their pine timber as they have ever before received, and conditions on the reserve promise a second forest and are highly gratifying to the Forest Service in Washington.

Certain promoters of the Drainage League are the opposers of the forest reserve, and I firmly believe they are working under the new name and in a different manner to emasculate the reserve.

There is no congestion in the northern part of the state that calls for drainage at this time, since we have 11,000,000 acres of land, practically unsettled, that is arable. The total area of New York is 12,000,000, and we have 11,000,000 acres exclusive of our swamp land in the Chippewa reserve.

These great philanthropists advocate the use of the Indian fund, which under the Morris Act has become an asset as against a deficit under the old Nelson Law. The Indian fund under the old law offered a similar proposition to that of the frog in the well, viz., If a frog jump up one foot each day and fall back two, when will he get out of the well? And yet, these self styled friends of the Indians and opposers of the Morris Act, desire to see the Nelson Law become operative.

We trust the Forestry Association will stand for the Morris

Act, which means the protection of the Indians and the perpetuation of the pine tree, and urge all to join us.

Mr. Roosevelt declared in his address before that remarkable congress—"You are mighty poor Americans if your care for the well being of this country is limited to hoping that that well being will last out your own generation. No man, here or elsewhere, is entitled to call himself a decent citizen if he does not try to do his part toward seeing that our national policies are shaped for the advantage of our children and our children's children."

CONDITIONS ON CASS LAKE RESERVE AS I FOUND THEM.

MRS. J. B. HUDSON, LAKE CITY.

I am not going to waste any time telling you about the boundaries of this reserve or its early history, as I take it for granted that most of you are familiar with the location and purpose of the Morris Act. I am going to tell you of a few of the things I saw and heard while on the ground this summer. As a member of the forestry committee of the State Federation of Women's Clubs I went up there with my eyes and ears open—and I had to put on "seven league boots"—to disprove the arguments made by some of those opposed to the reserve. The citizens of Cass Lake will tell you the forest reserve will practically put a wire fence around the town. They will tell you it is unjust to tie up so much good agricultural land in a forest reserve, and to prove that it is good agricultural land I was taken to a garden in Cass Lake in which were growing lettuce, radishes, tomatoes and other vegetables, and in one corner was a flower bed, and they expected that garden to prove their claim, but they did not tell me that a great deal of fertilizer had been used on that ground to get it in the proper condition to raise those vegetables and flowers. They did not call my attention to the network of water pipes running through the garden nor introduce me to the German gardener, who had recently come from Germany and spent considerable of his time working in that garden. A farmer who would go up there and who could afford to buy fertilizer in quantity could produce the same results. If a farmer could hire a professional gardener for every acre of his farm, and if he could afford to run a network of water pipes through his farm, he might succeed in a measure. I

will try to make this statement word for word as I made it before the federation. I want to quote from a Cass Lake paper—and they took the article from the Journal; I will only read the latter part. It said, "This little strip of garden has been fed with a quantity of fertilizer and artificially watered and is culti-

Lumbered area main forest reserve, showing seed trees left. Reproduced by permission of the Forest Service, U. S. Department of Agriculture.

vated by an imported German gardener." (The Cass Lake paper said nothing about fertilizer and perfectly ignored artificial watering, but they wondered where the lady had obtained her information as to the "imported" German). "Evidently she refers to Suter's garden patch and the man who looks after the work. Mr. Suter is an intelligent man, and the garden was worked before he came to Cass Lake." They know where I obtained it; I obtained it from Mr. and Mrs. Suter. This gardener, as they called the chore boy, was dignified with the name of porter in a small hotel, but his duties as porter were not very arduous, and the garden was right across the street from the hotel, and I saw him myself—and seeing is believing—and I saw that he spent considerable of his time there, and one day in talking with Mrs. Suter I said to her, "Why do you plant your tomatoes so close together? I plant mine a little further apart than you do yours." She said, "Well, we have nothing to say about the garden this year. We tried gardening several years, and we never had any results until Joe took charge of it this year, and this year we have had the first tomatoes we ever had out of our garden."

Then they will tell you you cannot make a forest reserve out of that country because the white pine and the Norway will not re-seed. Here is a stalwart lumberman, of forty years' experience.

who says the white pine will not reproduce and if you cut it down you will have poplar and jack pine to take its place. I want to tell you I was right up there over a "dead and down" forty that had been recently logged over, and there was on that forty but one lone white pine—and why that did not come under the "dead and down" act is a mystery, but that stands there—and the ground is covered with seedlings from that white pine, and not only there but everywhere we went we found white pine, Norway and jack pine in all stages of growth. I have not had forty years in the pineries, and I do not ask you to take my word for it, but I have specimens here of the reproduction of the white pine and the Norway pine from the reserve in Minnesota. These (exhibiting some young pine trees) were taken from the reserve, and you can look at them if you want to see them later. The trouble is a lumberman cannot see a pine tree if it has not four or five logs in it. I will say that before I became interested in this subject of reforestation when I went out to estimate a piece of ground I did not look around me, I looked up.

I want to quote again from the Cass Lake paper: "What the impressions of Mrs. Hudson were when she saw the destruction and havoc made by the wind will never be known."

I told it to the state federation, but because the Minneapolis Journal did not say anything about it they thought I said nothing. They will tell you that five per cent will be blown down or nearly that, and your senator will come back and tell you the same thing, he will tell you that five per cent were blown down. I want to tell you that senator was never on the forest reserve proper. He was up here on the ten sections that are reserved from sale and settlement to protect the boundaries of their lakes. The blow-down was great on that section, but lots of those trees were very old. Then the wet spring and unusual winds this year caused a heavy blowdown. There was a blow-down on the reserve proper, but when I tell you that the blow-down on the reserve was but five per cent actual count you will know "what Mrs. Hudson thinks of it." And when I tell you that 25 per cent, of the seeded trees could blow down and reforestation not be interfered with, you will see no serious damage was done.

I want you to look at this map of Minnesota ((exhibiting map)). Look at this area of the state of Minnesota and then look at this small section enclosed within the blue line. Then I ask you if the people of Minnesota cannot give that much; I ask if this cannot be given up to your children and my children. We have here a show ground that is equal in its own way to Niagara, to the Yellowstone Park or to any of the show places in America. We have a chain of forty lakes, and the wild beauty of this country is unrivaled anywhere in America. This is the headwaters of the Mississippi river, and you know what forestry means there. You have a natural park everywhere. You have the most wonderful formation of cedar on Star Island, covering probably 1,300 acres, and within this island is Lake Helen, covering eighty acres. It has its Indian legend telling why they refuse to visit the spot. They believe it is inhabited by an evil spirit. They believe they cannot go to the happy hunting grounds from the island.

Coming back from Lake 13 one day on either side of the road a group of Indians had pitched their tents. They had been selling blueberries and were returning from town. The brave was lying on the ground, the squaw with papoose strapped to her back was gathering firewood. We could not ask anything more artistic or pictureque than the scene we saw right there.

I believe it is simply a matter of education of the people. I will illustrate this by a little meeting we had in our own town

this fall when this subject came up for discussion. Four-fifths of the people in that room had never heard of this forest reserve, and to those who had it was simply a name without any meaning, and they took no special interest in it, but as soon as they knew what it was and what it meant, immediately there was a deep interest evinced, and a movement was started by one of our prominent business men, and it is supported by the best business men of our town. If the people could be educated, as was suggested last summer, if an exhibit be prepared next fall and shown to the people at the state fair you could not teach them any better business or in a better way than that. (Applause.)

The President: This reminds me of a report I saw some time ago from one district in the state of Maine which stated that there were cut over two million trees from six, eight to ten feet in height for the Christmas trade. Every winter we see in our markets huge piles of trees sacrificed for this Christmas holiday—which is one that we should keep for our children—and yet are we not taking what belongs to the future generation in order to please the children of today? From three to five and eight cents apiece are paid for the trees, and yet for that paltry sum they go through the forest and cut off the young trees that are growing.

PRESENT STATUS OF THE MINNESOTA NATIONAL FOREST RESERVE, AUGUST 10, 1906.

MRS. LYDIA PHILLIPS WILLIAMS, SEC'Y.

Congress closed without passing any legislation affecting the Morris Act under which the forest reserve was created.

A bill, drawn by the friends of forestry, was introduced by Congressman Tawney June 4th, 1906, which provided for the payment to the Indians for their land and seed trees, and also for a modified boundary line, to which the entire Minnesota delegation agreed.

The bill was expected to pass and close a long protracted controversy, and it seemed to fail of passage merely because it was not taken up in committee early enough in the year.

THE FOREST WEALTH OF MINNESOTA.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

According to the best available figures in regard to the lumber industry for 1900, there were at that time 438 lumber establishments in Minnesota, with a capital of about fifty-four million dollars, of which 43% was used in logging, 19% in sawmill plants, 3% in planing mills and 35% was live capital. The value of the product is put at \$57,000,000. The total number of employees was 22,500; the number of horses employed was about 5,000.

This gives some idea of the great value of the lumber industry to Minnesota, but we are working our great forest resource as if it were a mine and would not grow again, and at our present rate of manufacture this resource will be practically exhausted within the next ten or fifteen years. Although experts do not expect Minnesota to cease being a lumber producing state, yet the end of its great lumber industry is now within sight.

The state of Minnesota holds two and a half million acres of land within the forested area. This amount has been received for various purposes. Under the constitution, the state cannot dispose of its land for less than \$5.00 per acre. A large amount of land now held by the state is of no value for agricultural purposes, as it consists of land which is very rocky and ledgey, and of inferior soil. On its land the state now has about one and one-half billion feet of timber, valued at \$6.00 to \$8.00 per thousand feet board measure, or a total of about ten million dollars, which will probably be converted into cash within a few years. This state resource is also being worked as if it were a mine and would never grow again, although it might be used as a permanent endowment for our school and other funds.

There is probably at least five million acres of land in Minnesota that is of little if any value for agriculture, but much of it will grow valuable trees; and there is probably five million acres more that is now in trees but which is of such quality that it will not be needed for agriculture for many years, and much of this will yield better returns in forest than in farm crops. If this land was in normal forest condition, it would, according to the minimum estimates of experts, give an annual yield of not far from one billion feet board measure per year, or considerable more than one-third the present annual cut in Minnesota. In other words, if properly protected it would serve to perpetuate our great lumber industry.

Something should be done by the state to show the possibilities of reproducing valuable timber growth on the cut-over timber lands which today are growing little but brush. What we need now are demonstrations in forestry.

As a good example of the returns from forest lands, due entirely to the use of right methods of handling, it might be well to compare Spain with Germany. The German people over 100 years ago began to comprehend something of the importance of forests to their national development, and since then they have given much attention to this subject. As a result, the German forests are improving in condition from year to year and form a stable and important source of national wealth. The same is true of Denmark, Sweden, Norway, France and Switzerland. In Spain, however, there was followed the short sighted policy of over-grazing their natural timber lands with sheep and goats, and the result has been very disastrous for the country, not only in nearly destroying its forest wealth, but in injuring its manufactures by destroying the permanency of its streams. The opportunities for good forest management were just as good in Spain as they were in France or Germany, and its forests might have been a source of great national wealth.

RAPIDITY OF GROWTH OF TREES.

(From the report of the New York Forestry Commission.)

Beginning with a three-inch sapling the following named varieties of trees will, in twenty years, under favorable conditions, attain a diameter approximately as follows:

	Inches
White, or Silver, Maple	21
American White Elm	19
Basswood	17
Red Maple	16
Yellow Locust	14
Box Elder	14
Hard Maple	13
Red Oak	13
Scarlet Oak	13
White Ash	12
White Oak	11
Hackberry	10

The height which each species may be expected to attain is omitted here as it will assume the usual proportion to the diameter.

EVERGREENS FOR WINDBREAKS.

O. M. PETERSON, ALBERT LEA.

(So. Minn. Hort. Society.)

Of all the different varieties of evergreens now used for windbreaks on the farms in this section of the country the one known as the Scotch pine undoubtedly stands at the head of the list as the best tree for that purpose. This pine has many points in its favor, being very hardy, of quick growth and easily transplanted. It has been more largely planted than any other evergreen and seems to be still gaining in popularity. The ponderosa pine is perhaps a hardier tree but is a slow grower and has the disadvantage of being hard to transplant. The Austrian pine seems to be gaining in favor among planters, and justly so, as it is a handsome tree and perfectly hardy. The jack pine is chiefly valuable on dry, sandy soils where no other evergreen can be made to grow.

The Norway spruce is a very popular tree for windbreaks and has been extensively planted. It is a rapid grower and easy to start. It is not, however, as hardy a tree as the American white spruce, but the latter is difficult to propagate and is always so expensive that it cannot well be used for windbreaks to any great extent. On low, moist ground the American arbor vitae will make a good showing, as it is so closely branched as to form a tight screen. It should be planted closer together than the pines.

There are some other varieties of evergreens that are desirable for windbreaks, but those here mentioned are the most reliable for Minnesota planters, and there is nothing in the way of every farmer having an evergreen shelter belt around his home and for his stock.

It should be remembered that evergreens, in order to do their best, should have thorough cultivation and the weeds kept out, during the first few years after planting.

Any one wishing to beautify a yard or grounds with trees can scarcely do better than to put in a generous number of hardy evergreens of the ornamental sort. Although nearly all evergreens are of fine appearance there are some that are so much more beautiful than others that they may be classed as ornamental. Of all evergreens the Colorado blue spruce is universally admitted to be the finest—the king of cone-bearing trees. For single specimen planting there is no other that can be compared with it, and it deserves a more general plant-

ing. Although an expensive tree, it is of more value as an ornament than half a dozen of other sorts. The white spruce is an excellent ornamental tree, retaining its dark green color throughout the entire year, and is on that account better than the Norway spruce. The Douglas spruce and the balsam fir should be planted for variety. The dwarf mountain pine presents a fine appearance in the front yard, and does not grow high enough to obstruct the view. The Austrian, white and

Colorado blue spruce, on grounds of A. W. Massee, Albert Lea.

Scotch pines are the best of the pine family for ornamentals, and add much to the appearance of the grounds.

To secure the best effects evergreens should be planted in groups, as they look better this way and make better growth.

For hedges the arbor vitæ is one of the most desirable, as it can be sheared to any shape desired. The red cedar also does well for a hedge on high, dry ground.

PRAIRIE FORESTATION.

LYCURGUS R. MOYER, MONTEVIDEO.

A prairie has been defined to be an undulating, grass-covered plain, as distinguished from a tree-covered plain on the one hand and from a semi-arid plain, or steppe, on the other. A forest is a tract of land covered with a natural growth of trees. The word "forestation" does not seem to be found in the dictionary, but it is doubtless intended to refer to the tendency shown by all prairies to become covered with trees.

The northwestern prairies, those that we are familiar with, are covered for the most part with a thick covering of boulder-clay, sand and gravel, deposited during the glacial epoch, and familiarly known as the drift. Geologically speaking there is but little difference between the formation of the prairie and that of the adjoining forested area. Throughout Minnesota, or at least throughout the greater portion of the state, the same drift formation underlies them both.

It is likely that before the drift period much of what is now in the prairie regions was covered with trees. Indeed old tree-trunks and stumps are frequently found throughout the glaciated area deeply buried in the drift.

The great northern forest encircles the globe, extending across each continent from ocean to ocean. On our continent one arm of this great forest extends south along the Coast Range Mountains, and another arm extends along the Rocky Mountains quite to the Mexican border. Toward the east another and a wider arm of this forest swept to the south and covered all the Atlantic states. It is to the west of this great Atlantic forest and to the south of the great Arctic forest that the prairie regions are situated. The prairies extend westward to about the 100th meridian, where the plains region may be said to begin.

The line between the forest and the prairie crosses the northern boundary of Minnesota about fifteen miles east of Emerson and St Vincent, and extends southeasterly by the way of Thief River Falls to White Earth Agency. It then extends to the south by the way of Detroit and Pelican Rapids to Fergus Falls, and thence southeasterly near Alexandria, Litchfield, and Glencoe, to Blue Earth County, where the line turns to the eastward, and then to the northeast, entering the state of Wisconsin near Hudson.

Scattered groves and remnants of forest are found to the south and west of this line, such as the timber along the Red River, and in the Minnesota Valley, on the shores of lakes, and in the coulees cut by streams through the Coteau des Prairies. This timbered area, however, sinks into insignificance when compared with the vast areas of surrounding prairie.

Various theories have been advanced to account for the treeless condition of the great prairies. Some have thought that the rainfall is insufficient. Others have pointed to the fact that the rainfall is unequally distributed through the year, sufficient perhaps through the summer, but deficient through the winter. Others have suggested that the hot southwest winds from the plains scorch and wither the trees and make the forest impossible. Many think, and with much show of reason, that the treeless condition of the prairies is due to prairie fires set by man. Indeed there is reason to believe that for a long time the great enemy of trees has been man. Professor Shaler has advanced the idea that the American Indians before the advent of the whites had advanced to such a degree of culture that they had begun to regard the great herds of bison then living on the prairies somewhat in the light of domestic animals, and that they purposely set fire to the prairies and forest openings to make the pasturage better for them. Whatever may have been the effects of the prairie fires started by the Indians, there can be no doubt that the axe of the settler, as well as the brush and prairie fires started by him, has been very detrimental to such tree growths as have sprung up on the prairies. Thus, at Minnesota Falls, where there was at one time quite an extensive growth of natural forest, the trees have been entirely cleared away, and the ground broken up for wheat fields; and this, too, at a point fully sixty miles beyond the "Big Woods", where the surrounding country was already all prairie.

At Lynd, in Lyon County, there was at one time a fine grove of hard maple trees in the valley that the Redwood River has cut through the coteau. This maple grove has been cut away, the ravine has been fenced in for a pasture, and the forest has been completely destroyed. Had the stock been kept out the trees would have reproduced themselves. A similar calamity has occurred to many of the groves and forested areas throughout the prairie districts. The natural tree growth was usually found on rather rough and uneven ground unfitted for farming. The surrounding prairie was all broken up for wheat raising,

and the grove was fenced for pasture. After a grove has been pastured for a number of years, the trees begin to fail, the forest cover is destroyed, and the entire destruction of the forest is only a question of time.

If fire and livestock were kept out of prairie groves, they would rapidly reproduce themselves and enlarge their borders. Indeed throughout the prairie regions, wherever the ground is rough or uneven, a vegetation peculiar to the borders of forests begins to appear. The wolfberry (*Symphoricarpos occidentalis*) springs up and spreads rapidly over the prairie, forming a dense shade. This shrub has a tendency to destroy the tough prairie sod, and under the shelter of its leaves, sun-flowers, silphiums and other tall compositae spring up, to be followed by box elders, green ash, bur oaks, and other forest trees. On low bottoms the sandbar willow has the same effect as the wolfberry, forming dense patches on the prairie bottoms, to be followed by box elders, ash and elms. On other and higher prairies the borders of the forest are extended through the growth of such shrubs as wild-rose, wahoo, choke cherries and wild plums. As soon as the shrubs have taken possession of the ground, the seeds of trees spring up amongst them, and the forest is extended. Where pasturage is the rule there is little opportunity for this cover of shrubs to develop so as to protect the young seedlings of forest trees. If our farmers would use foresight enough to keep the stock out of the natural groves and out of the ravines where wolfberry grows, and if trees were planted on rough ground where they show a tendency to grow naturally, the work of foresting the prairies would be greatly simplified.

There is, however, in southwestern Minnesota but little waste land. Nearly all the land is fertile and well adapted to general farming. It already sells at from \$30. to \$60. per acre and is steadily advancing in price. This land is too high priced for forestry purposes. Trees for timber and fuel can only be grown with profit on cheap land.

The people of the prairie regions are much interested in tree-planting for shelter belts and for landscape adornment. In southwestern Minnesota the prairies are already dotted everywhere with artificial groves. Too often these groves have not been set with the best trees. The box elder, a quick growing, temporary tree, has been planted too much. Too many cottonwoods have been planted on dry land, where they will even-

tually fail. Too few elms, silver maples, green ash and hackberries have been planted.

In the artificial prairie grove, forest conditions are rarely established. Those plantations have done the best that have been made of mixed varieties of trees from the forest nearest at hand.

NURSERY AND ORCHARD CONDITIONS IN MINNESOTA IN JULY, 1906.

PROF. F. L. WASHBURN, STATE ENTOMOLOGIST.

(Aug. number was made up when this was received. Ed.)

Having just completed our annual tour of inspection of the nurseries of this state, it may be of interest to the readers of the Horticulturist to learn something of the conditions prevalent in nurseries and orchards at this date. As a rule nursery stock is looking in good condition, and nurserymen report a prosperous business. North Dakota seems to be the Mecca of agents, for farmers there are reported to be very prosperous and willing to spend money. It would seem, from a list of some of the fruit trees sent there, that our neighbors on the west have yet to learn something regarding the hardiness or lack of hardiness of certain varieties of apples planted in this latitude. It is even rumored that they are buying North Dakota peaches. Nurserymen are complaining bitterly of the Montana inspection law, which calls for a license of \$25 to outside nurserymen sending stock into the state, in addition to a thousand dollar bond. This seems to be an unjust discrimination and looks as though it were the result of local interests in that state.

This is evidently an off year in the apple crop, and yet in Dodge County we saw many trees in bearing, probably more in Dodge County than in any other part of the state visited. In several places we observed the Peerless coming to the front with quite good crops. In one favored locality we saw three or more red Astrachans, five to seven years old, well loaded with fruit, and in another nursery we saw a row of Jonathans, which had stood there for three years and seemed to be in good condition, although not making much growth. At Fairmont a large pear tree, possibly ten or twelve years old, was loaded with pears, the variety being unknown to the nurseryman and to the entomologist. In West Concord and in some other towns a very praiseworthy habit exists of planting apple trees outside the sidewalk for shade trees, making a fine appearance, and they certainly are practical. Mr. Cowles, of West Concord, told

us that he had seen only two or three branches broken by thoughtless boys. Apple grafts, as a rule, have made a good stand and in a few places made excellent growth, though in other places the superabundance of water has kept them in check.

Spraying in nursery and orchard seems to be a fairly general practice, Bordeaux mixture being the principal fungicide used. One nurseryman has used dust spray for several years, he claims, with excellent results. We were pleased to note one spraying outfit modeled somewhat on the lines of the tall cart which we had made by this department, and which was exhibited a year or two ago at one of the summer meetings of the society.

We found leaf hoppers not so bad as they have been, though in a few places they were checking the growth of the apple trees. We found the locust borer severely injuring locusts in one locality, and the usual quota of lice in various nurseries, but nothing serious. Fire blight is bad in some places, and not seen at others. At this date it is not so general as it has been in previous years. In one place, however, we found Wealthy, Duchess and Transcendents almost succumbing to it, and the Transcendents, old trees, doomed to be cut down on this account.

Strawberry plants we found in many places to have suffered considerably from the severe winter, and as a rule there is a poor crop this season. In one place we find that the grub has been working upon the crown of the plants. Raspberry canes, too, were in a number of places injured by the severity of the winter season. One orchard was found with trees loaded with fruit, and the proprietor claims he had as fine a crop last year and thinks it is due to using Bordeaux every year and pruning judiciously.

WHAT TO FEED CUTWORMS.—A neighbor who had lost her pansies year after year decided to plant a row of castor beans near her flower beds. These beans grow rapidly here and are always nice to look at. They shaded the pansy bed and conserved the moisture. The worms seemed to prefer to eat the roots of the castor bean plant. In the morning she found them lying on the ground dead, and the pansies were safe. Has that been the experience of other Orange Judd Farmer readers?

THE STUDY CLUB AND ITS ADVANTAGES FOR BUSY WOMEN.

MRS. E. M. LA PENOTIERRE, MINNEAPOLIS.

Unlike the lady who said she felt a little embarrassed in addressing this company of horticulturists I must say that I feel very much at home in this atmosphere, indeed I feel like saying that I am the oldest horticulturist in the room. My earliest recollection of being of any assistance in the world was in assisting my maternal grandfather, Johnston Glass, who was a leading horticulturist in his day in his chosen work. He made his farm out of the wilderness in western Pennsylvania, near the city of Pittsburg, and he traveled all over that country to secure switches and scions and then grafted them upon the native fruit, anything that he thought might support life. He used the crab apple as a basis to produce fruits. He went north, south, east and west to get anything he could find. My part was to carry a small basket in which there was a supply of clay, which he took out of the bottom of a spring, and which he used to cover the grafts and buds. He had none of the modern conveniences to carry on his work, and yet he was very successful. He came to have the very best selection of fruits in that part of the country, and many people came long distances to obtain scions of his culture. After my marriage, twenty-eight years ago, I had the honor of being elected treasurer of a local horticultural society, which had an eventful history for a few years. The excuse given by one woman for joining the society was unique. It was in a prairie town, and in the evening we could see a locomotive headlight twenty miles away: the country was very flat and treeless and the lady gave the excuse that now she would be able to get switches at home, to correct her children, while before that she had to go three miles to obtain them. (Laughter.) I still have in my possession \$2.35 of the funds of that horticultural society. I hope some time I may be located where I can put it to good use with some horticultural society.

This is the preface to what I am called upon to say to you on the advantages of the study club. I feel complimented to be invited here and to have the privilege of speaking upon this subject, because it gives me an opportunity to defend the woman's club. The federation of club women in the United States numbers now about 750,000, so naturally the federated club movement is a far reaching one, and it has been such a success that it has been universally approved of, but if there should be the idea conveyed in this

topic that club women are not busy women, I want you to dispel that from your minds, because I am sure you are all familiar enough with what club women are doing and with what they expect to do that you must already know they are very busy women.

One of the most delightful recollections I have of my connection with the club movement in the state of Minnesota refers to a visit I made to a club composed of women from farms. I do not remember ever meeting with women who were so earnest in their chosen work or so wide awake as were those women. Some of the women had driven ten miles to attend that meeting. The subject was "Our Philippine Possessions," and they were making a practical study of the conditions in the Philippines, and I am sure at the close of the club year what they did not know about the Philippine Islands was not worth bothering over. I remember that afternoon was a perfect inspiration to me. I received so much benefit myself that I went away a much wiser woman as to our island possessions. One of the subjects had relation to the trees growing in the Philippine Islands, and I am sure all of you would have been more than benefited to have listened to the excellent papers by the women who had made the subject a complete study. On another occasion I was delighted with the remarks of a woman at a club meeting when she told of the changed condition of the cemetery in her little home town. She was a widow, her husband having died there ten or fifteen years previously. She said the cemetery of the town was one of the most forlorn places imaginable, neglected and unkempt. No one would have thought of going there unless Providence required it. She said she felt so impressed with this state of neglect that she determined to make the spot more attractive. She so impressed the club women of the town that she succeeded in having a beautiful avenue of trees planted reaching from the town to the cemetery, the road kept in good condition and the cemetery grounds kept in proper order. I felt that if that woman had never done anything else in her life than that work she certainly deserved a monument over her grave when it came to be her time to be laid in that cemetery, and I felt the town people could not do anything wiser than to remember the good she had done for that spot.

I am sure the avenues of interest are diversified enough today for all women. When our library authorities say of our own state that there would not be a single local library in the state except for the club women, it is a tribute to the club women and the efforts they have put forth to secure libraries, and our club women are entitled to great credit for what they have done in that direction.

Traveling libraries now number 250 in the state, going into every village, hamlet and neighborhood, and that condition is entirely due to the women's club movement. The women of the state who desire information and have access to public libraries, now have access to the traveling libraries, and Minnesota has done a wonderful thing in providing these traveling libraries.

When we look at what the club women of the country have done in the interest of child labor, and what the southern women have done in the south in the cotton factories for the bettering of the condition of those that labor in them, we must acknowledge that they have done a great work. In the southern states they erected their large cotton factories and then put the white children into them, children from seven to fifteen years of age, some of the children going on at six o'clock in the evening and working till morning, put to work because their delicate little fingers are more agile and better fitted for the complicated machinery. When this condition of affairs became known it created a perfect horror among southern club women, and they have now eliminated it to a great degree.

The condition of the sweat shops in eastern cities has been taken up by the club women of the country, and we know what has been accomplished in eliminating that trouble. When we think of the interest club women have taken in education in the local schools of the country, and of the demands made upon educators for certain changes in the educational system, and the ready response with which they were met in their demands, I do not think any one will withhold the proper credit from the club women.

We know what the women of the western states have done in the interest of irrigation. Some women said that was getting into politics. The reply was, "No! That is not politics, it is religion." And so they became interested in the great problem of irrigation in the west, and we in Minnesota expect to benefit by it. Now we come to the subject of forestry which is a subject that interests you greatly. The club women have interested themselves in the forestry proposition, about which you will hear from another source. When you see the influence the club women have upon some of the great affairs of the day you will know how busy they are and how it is hardly possible for a woman to go into a club without being a busy woman. Fundamentally the idea was for self-culture. The women took up the outline study for self-culture, but they have gotten away from that long ago; we are spreading out, and whether in the hamlet, the city, the state or the nation, we are busy people—and wherever you find a club woman you will find a busy woman. (Applause.)

Mr. S. M. Owen: I want to say first in response to the excellent talk we have heard that the defense the lady makes of the woman's study club is hardly necessary. But I was reminded as she was talking of being at a table the other evening where some ladies—four of them—were at the table, and they were club members, all of them. One of them was boasting of how many prizes she had won this season in playing cards; another told of an occasion a few days before when they gathered together to play cards and played from eleven till six o'clock in the evening, stopping only to get a luncheon; another one, a member of the same club, told what a trouble she had in keeping her children clean, etc., and how they would come into the house covered with mud in spite of all she could do, and of the difficulty she had in keeping them clothed. That is the sort of club that is being criticised, severely criticised and is deserving of criticism. The kind of club Mrs. La Penotierre talked about, the kind Mrs. Underwood and others talked of, is of more importance.

Now I am going to speak, and advisedly so, of a subject that is of more importance to the people of our country than the subject you are talking about here, the subject of growing fruit and apples. I can scarcely conceive of any work more delightful than the work you people are engaged in here, developing the fruits and flowers of this country, but there is something more than that, and without the development of this sentiment the work you are doing in growing fruits and flowers is going to be barren of results that you might otherwise realize. The age is altogether too commercial. The American people, as a rule, are too commercial; they are continually asking what there is in it, and that always refers to the money value as though there was no other consideration. Now what is there in it? What is there in this kind of work that Mrs. Underwood read us such a delightful essay upon? The effort, beginning with the children, to develop the spirit which will make them as they grow up to appreciate the unrewarded labors that you are engaged in, that you horticulturists are engaged in now. It will make them more alive, because it will give them a better conception of what is to live.

I am amazed, as I come in contact with people, to see and learn in conversation with them how absolutely blind they are to their surroundings, how unconscious they are of the beauty about them and how little they are learning all the time. I am reminded of a little trip I made between two towns in Minnesota not long ago. I was traveling with three gentlemen, residents of the locality, across

the prairie, just an ordinary, monotonous prairie, until we came out on the banks of a valley where a beautiful little village clustered down in the center of it, gracefully nestling among the hills on either side, running back to an elevation of one hundred to one hundred and fifty feet. Over at my right was a beautiful lake, green as emerald, flashing in the sun like a gem; over to the left was upland, and on the side hills were grazing flocks and herds. I asked the driver to stop for a moment, and I pointed out and referred to the beauty of the scene spread out before us. Over all there was a sky as blue as ever shone over landscape, flecked with those fleecy clouds that but added a distinct charm, and it seemed to me to be more delightful in Minnesota than in any country I have ever been in. I said to those gentlemen, "Here is a scene right before us that is just as beautiful in every respect naturally as the scenery in England, the rural scenery of England that has been celebrated in song and story for centuries and centuries. They come here and talk to us about the beautiful rural scenery of England. There is nothing more beautiful, except time and labor has supplemented the natural beauty, but the natural beauty is no greater than that which is spread out before us." One gentlemen said, "It is pretty. I have lived in this country a good many years, I have driven over these roads hundreds of times, but I confess I have never seen the picture before." If that man when a child had been brought under the kind of instruction Mrs. Underwood talked about he would have seen the picture, and he would have been enjoying it all these years, instead of having it lie there a perfect blank before him. It is because we want to get this sort of things into our lives that I want to see papers like this discussed. They ought to be talked about, and we ought to go home resolved that not only will we cultivate this sentiment within ourselves, but that we will teach it to others, especially to children, and endeavor to develop this sentiment, this love for the beautiful, that will stimulate all that is good within ourselves, and out of that love of the good will come better citizenship, an intenser loyalty and all those things that make for a better country and one more enjoyable to live in.

One thing more: A few weeks ago I was in a town in the Red River Valley. I had not visited the place before in fourteen years. I recall the time distinctly. I wanted to know just how long it had taken to make the metamorphosis I saw. This was on the bleak prairie where they thought they could not grow anything but wheat. When I was first in the town it was only a prairie village of the conventional kind, with no trees in sight. When I visited the place

this summer there were streets laid out straight and long, and on both sides of the driveway were rows of beautiful trees, and along the sidewalk there was a beautiful avenue of trees, and so it was on a half-dozen of those long streets—they were beautiful with the trees that had been planted there. I learned that the authorities had made a special provision for a rebate of taxes for those who would plant trees along the road, and there they had made a bleak, scattering prairie village that I had seen only a few years before look like a veritable paradise. That is not all: Besides those trees there had been planted fruits, small fruits of various kinds, raspberries, strawberries, apples and all sorts of fruit, everything doing nicely. Strawberries had gone through the winter in excellent condition, those trees protected them, and this was in a place where it was predicted that vegetation would be a failure, in the Red River Valley. This was in the village of Argyle. First was this love of trees which encouraged the people to plant them, then came later the product of the fruit, and it was sentiment and not money they got out of it. So I wanted to take this opportunity before this subject was passed by to say these things to you to convince you of the great importance of the subject these ladies have presented to you this afternoon and try to make you feel that these subjects should not be passed by without some comment, some additional word from you and me. I thought if we did that perhaps the ladies would be better reconciled to the fact of not bringing our wives with us. If they have made some impression upon us that will be some satisfaction. (Applause.)

Mr. J. M. Underwood: I want to take just a moment of time, I do feel something like a Methodist just now, although I was brought up a Quaker. I cannot refrain from urging the importance of this auxiliary society of the Minnesota State Horticultural Society. I had a little something to do with its inception, and I do believe if the women who rightfully belong in the horticultural ranks, the wives of the members, the wives of horticulturists, and other women who otherwise would never have an interest in horticulture, if they would realize the opportunity they would have in working along with this auxiliary society, they would in a very few years have a stronger organization than the men have. This is almost altogether a society made up of men, of men who have become members who have paid a dollar for their membership, but I believe it is possible to have a society of women that will almost double that of the men if they would only realize the possibilities that lie before them. I want to tell you that I believe if the women would come in and do the work it would be done in a more practical way and it would be better work than the men are doing. I received a letter this summer from a lady whom I had never met. She said, "I understand you are superintendent of the agricultural department of the state fair, and I want to inquire of you if it would not be possible to have a practical exposition given there in connection with your department of the proper way of planting trees, the proper distance apart to plant them and the proper care that should be given them." I will not take time to tell you what a practical letter

this lady wrote me in outlining the work she wanted to see done at the state fair, but she said there was so much ignorance as to the proper way of planting trees and shrubs and caring for them. I met the lady afterwards, and we had a very pleasant time considering the matter; but the time was too short, and we could not do what she wanted done at the state fair. It seems to me the possibilities of what the women could do in horticulture if they would come together, and work together with this auxiliary society are so great that we men would be ashamed of ourselves of what we accomplish in five years' time. I sincerely believe it, and I simply want to urge you ladies here present that you take an interest in this work of the auxiliary society and come next year. No matter whether your husbands or male members of your family are connected with this society or not, come anyway and join this auxiliary. It does not cost much for membership, and I would like to see a membership of two thousand women auxiliary to the Minnesota Horticultural society, and you can do it if you will. (Applause.)

Mr. Geo. J. Kellogg (Wis.): I almost wish I lived in Minnesota. I wish I might carry some of this enthusiasm to our women's club where I do live. I do not know any other way except to put our publications in the hands of the women. They are not interested in horticulture, they are only interested in history and things of that kind. I am going to put some of this literature into their hands and am going to see if I cannot arouse an interest among them. My wife is so particular she does not want to see a leaf lie bottom side up, but there are lots of women whose lawns are not as nice as they might be, and they ought to have just this kind of education.

Mr. S. A. Stockwell: I think I have a right to speak; I am a member of this society, and I have my sweetheart and wife with me. (Applause.) Brother Latham requested me to follow Mrs. Nelson and make some remarks on the paper she read, but I do not think there is anything to say on that subject, and I do not believe there is any one here but believes that neighborhood organization is needed. She referred to what was done in connection with their improvement association, and Brother Owen referred to the fact that up in Argyle they had taken off some of the taxes of people who had improved their lands. I am not going to make a speech on taxation, but I believe back of all questions of state-craft lies the most important question for society, and that is the question of taxation. Is it not a strange proposition that we tax people to make their homes beautiful, to plant trees and flowers, but the people who make their grounds a storage place for tin cans and dead cats have their tax taken off. The man who makes two blades of grass grow where one grew before, you lay a heavy tax on him, but the man who makes the grass unsightly you let him go scot free. This is not a subject that is germane to horticulture except indirectly, but it does seem to me that we as citizens of Minnesota might do something practical along this line to bring a better day to all who want to do good, who are "soldiers of the common good." Could we not agitate the proposition to make it possible for communities to have the right to levy their taxes on such property as they see fit and make it pos-

sible for men to do things along the line on which we have been talking? Should we not have the right in every locality to say we should raise the revenue for our support? Should we not have a constitution that would grant every state that right? There will be a better day for all of us when woman has her inalienable right in a voice for the government under which she has got to live. (Applause.) One-half, and the best half, of the people of this country, except four states in the Union, are disfranchised. If we want our cities to become types of the best homes, then we want to give woman the right to vote upon affairs of statecraft. Now, my friends, we ought to go away from this meeting with an earnest desire to do the work along the lines suggested by Mrs. Underwood. When I ride down Minnehaha avenue, as I do, as I strike Thirtieth Street and come into the shade of as beautiful a row of elms as ever existed, which were planted by farmers who lived along that highway more than twenty-five years ago, I think of the legacy those men have given to us who came after. Is it not fair and just then that you and I should do something for those who come after us along the same line? (Applause.)

Mrs. La Penotierre: I would like to give another picture of my grandfather of blessed memory. The patrons of the school on his farm were the children of miners. Grandfather planted apple trees and chestnut trees along the lane leading to the schoolhouse, and he said, "I will give the trees to the children; the trees belong to them." The trees were never harmed in the least, and the children enjoyed the apples and chestnuts for many years. (Applause.)

Mrs. T. A. Hoverstad: I do not know that there is anything I can say except that I have enjoyed the afternoon exceedingly, but I felt grieved when the gentlemen went out as soon as the ladies began to speak. There have been so many excellent things said this afternoon. The lady from St. Paul touched a line of thought that I was much interested in, and that was in the way of children doing useful labor; whatever they may be doing, they should try to do work that will be beneficial to people about them or to those who may come in the future. A tree planted by the children will stand as a monument for many years after they are gone. (Applause.)

Mrs. Jennie Stager: Our town is very hard to do anything with, but we have a very beautiful cemetery if it was taken care of. Most of the young people go to the cemetery for a walk. I went to the cemetery meeting this year to get them to lay off a little piece in which to plant trees and shrubs and flowers and beautify the lots in the cemetery, and they agreed to do that if I would find the trees and shrubs and flowers. I did agree to do that, and we did the work. That is the beginning of the cemetery work, and they agreed to set out the plants and keep them up if I would give them the plants. I am in hopes in the near future there will be more of that sort of work done.

The President: If one woman can accomplish so much we can certainly do more as a society.

Mr. J. M. Underwood: There are clubs and clubs, and I wish to say to the members of the state horticultural society that they will have to co-operate to a certain extent, to a large extent, with the Minnesota State Federation of Women's Clubs. They have a standing committee that looks after the interests of improvement, outdoor improvement, in country villages and towns, and every year this committee has more or less of interest that is brought before the federation, and I think if any of the members would make it convenient to attend any of those meetings they would find that to a large extent the women are really in line with all that work that would be of help to them.

The President: When Mrs. Hoverstad spoke of the exodus that took place I thought of what Mr. Underwood said about women joining our association. I hope another time he will urge the gentlemen to remain for the program, for I am sure we always have on our program something that would do the gentlemen quite as much good as what they hear in the other meetings.

Secretary's Corner.

R. H. L. JEWETT IN CALIFORNIA.—This old member of our society is reported as having been in California since October last and in somewhat feeble health. We hope to have early news of an improvement in his condition.

WHERE THE APPLE CROP IS GOOD.—J. W. Beckman, of Cokato, Minn., says, "The crop on heavy soil is poor, but on sandy soil with good drainage the trees are loaded." How far does this agree with the experience of others this year?

EARLY PLUMS.—Two boxes of plums were received in the office Aug. 13th, one from Mr. Beckman, Cokato; and the other from L. P. H. Highby, Albert Lea, a plum, as he says, grown in the woods, but of sound flesh and good quality, free from astringency. It seems to be worth looking after.

THIN OUT THE WEALTHYS.—Many reports throughout the state show that the older Wealthy trees as a general thing are bearing more fruit than they ought to carry, especially, where, in many cases, the foliage appears weak and unable to do the necessary work of maturing an extraordinarily large crop. Why not go through the orchard and systematically thin the fruit on these overloaded Wealthy trees, as they do in the highly successful peach orchards of the south, where no two peaches are allowed to touch one another or come within several inches of it? It is a question whether an early thinning of the Wealthy would really much reduce the crop. Certainly not the income from it, as those that are left would attain greater size and higher color, bringing a better price in the market. If the grower is in doubt as to the advisability of going to this expense, select two trees of this variety of equal size and bearing. Thin the crop of one tree, and when the fruit is gathered, pick the crop from each of these two trees separately and make a note of comparative results and report to the secretary.

TRUTH IN A NUT SHELL.—“A good many varieties of winter apples can not survive a *severe Minnesota winter*. Now the crab root and stock that has a surplus vitality, like the Gould or Virginia or Hiberna, comes to us and says; ‘I can give off surplus vitality to make up the otherwise *failure*.’ What a wonderful plan to *tide over* what a few years ago we thought would always be a failure in this state. This good subject ought to add ten to twenty to the seventy years of my life.” Seth H. Kenney.

FRUIT FOR THE WINTER MEETING.—Are you remembering to store fruit for the win’er meeting? In preparing for the state fair this might be overlooked, and we consider it of equal importance to the work of the society that the fine annual December show of the society should be maintained. As far as these fruits can be kept at home it is well that it should be so, but any that will not keep well there should be put in cold storage here in Minneapolis. It will be kept here and delivered without charge at the place of meeting on the day before it opens. Cold storage tags can be had of the secretary by all who desire to use them.

SECRETARY BARNES OF KANSAS.—The secretary of the Kansas Horticultural Society, Wm. H. Barnes being in Minneapolis during the G. A. R. Convention in August, paid the office a visit and was duly impressed with the fact that there was more fruit raised in Kansas than in Minnesota, which we were prepared to admit. Mr. Barnes is a man of large and successful experience with the Kansas society and under his fostering care there are maintained throughout the state sixty local horticultural societies, which he visits yearly or oftener. The office of the Kansas society is in the state capitol, where they are in palatial quarters, with a room thirty by fifty feet, sixteen feet high and appropriately lighted and furnished. When we come to know how some other societies are doing, we also have stirrings of ambition and live in hopes.

THE PRESIDENT OF THE IOWA SOCIETY.—Pres. W. A. Burnap, the well known horticulturist of Clear Lake, Iowa, at present president of the Iowa State Horticultural Society spent a half day about the middle of August with the secretary, who enjoyed very much the renewal of old acquaintance in this way and took advantage of the opportunity to learn a lot of things about the Iowa society, which we hope to fit into the workings of the Minnesota society as occasion offers. What is said heretofore about the Kansas society office applies also to the Iowa society, which is elegantly housed in one of the finest capitols of the states. Iowa, we understand, has four local societies, which hold annual meetings and report to the state society. Each of these local societies covers the field of approximately a quarter of the state.

AN OLD MEMBER CALLED.—No one amongst the many callers last month was more welcome than Mr. A. H. Brackett, an old time member and for some years treasurer of this society, who eight years ago moved with his family to Skaguay, Alaska. For some years previous to his removal, Mr. Brackett was a successful fruit grower on the north shore of Lake Minnetonka, as all the older members of the society know. We have been in touch with him throughout these years and during most of the time his name has appeared upon our membership roll. He sent us at one time for exhibition at the state fair a fine exhibit of Alaska vegetables, which came to the fair from Skaguay in the extraordinary time of six days. Mr. Brackett is now permanently located in Seattle, where he has developed a successful business.

THE CHERRY TOP-WORKED ON THE PLUM.—Mr. C. M. Yegge, of Alpina, S. D., who was in the office lately, has had twenty-four years' experience in grafting the tame cherry on the Americana plum with much success. The graft gradually outgrows the stock but not to such an extent as to be a source of weakness. He reports his cherry trees grown in this way as good bearers and hardy. Isn't this an experiment well worth trying on the part of our readers, especially in localities where the cherry has failed to do well when grown in the usual way?

A NEW THEORY OF BLIGHT.—Mr. C. H. Gangelhoff, who owns one of the oldest and best orchards in Long Lake, Minn., has a new thought in regard to the cause of blight, as follows: "From my this year's experience with my orchard I now think I know what causes the blight. I am satisfied that it starts from the blossom, because on the Transcendent crab trees that bore heavily last year and on which there were no blossoms this year there is not a particle of blight. The trees that blossomed that adjoin same are badly blighted, and what little fruit there is on them is shrivelled."

PREMIUMS ON FRUIT.—The following premiums are to be offered at the coming annual meeting of the society, December 4-8, 1906.

GRAPES.

	1st. Prem.	2d. Prem.	3d. Prem.
Collection	\$5.00	4.00	3.00

APPLES.

Collection, not to exceed 10 varieties.....	6.00	4.00	2 90
Each variety of apples included in the 1906 fruit list of the society, or in the 1906 premium list of the Minnesota State Fair (kept in cold storage).....	.50	.25	
Each variety of apples (or crabs) included in the 1906 fruit list of this society, or the 1906 premium list of the Minnesota State Fair (not kept in cold storage).....	.50	.25	
N. B. All pecks of apples exhibited to be at the disposal of the meeting.			
Peck of Wealthy apples.....	3.00	2.00	
Peck of Patten's Greening.....	3.00	2.00	
Peck of Northwestern Greening.....	3.00	2.00	
Peck of Okabena.....	3.00	2.00	

SEEDLING APPLES.

Exhibitors of seedling apples are requested to bring not less than six specimens of each variety shown and as many more as possible not to exceed twenty. Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

EARLY WINTER SEEDLING.—The Fruit shown must not have been kept in cold storage. Concise history and description of the tree and its fruits must accompany each entry. Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator. Premium will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.
Premium \$40.00

LATE WINTER SEEDLINGS.—Same conditions as for early winter seedling except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter.
Premium \$60.00

Special premium offers will be made later.

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HORTICULTURE AT THE MINNESOTA STATE FAIR, 1906.

A. W. LATHAM, SECY.

The annual fair of the state of Minnesota, held during the week of Sept. 3rd to 8th, 1906, was phenomenal in a number of respects:

Ist. In the attendance the first day of the fair, which exceeded ninety thousand and much surpassed the ability of the Twin City car system to take care of the crowd comfortably, though there seemed to be plenty of room on the grounds and in the large number of buildings and tents used for exhibition purposes.

2d. In having a week of cloudless sky, each day being one of brilliant sunshine and kindly zephyr.

3d. In the last two days of the fair being among the hottest days ever known in a Minnesota September, the thermometer touching ninety degrees outside in the shade, and being any amount hotter inside the buildings, depending on the facilities for keeping out the sunlight and securing ventilation. In both of these respects Horticultural Hall might be improved, and surely will be before another year, as there is a large amount of glass in this building for the admission of the sun's rays and too few skylights are adjusted for ventilation.

Financially the fair was a decided success, and the amount cleared up therefrom will probably be as large as at any of its predecessors.

The exhibit in the horticultural department was in itself phenomenal when the condition of the orchard crop in the state is taken into consideration. Very few of the regular exhibitors were in a position to show as many varieties as usual, and in a number of cases the fruit crop was so light that they declined to exhibit at all, but as there were some new exhibit-

ors about the usual amount of fruit was shown, and as the fair was held a few days later than last year and the season was a little earlier, the exhibit was nearer mature than the show at the state fair of 1905, the fruit being larger in size and showing more color.

The plum exhibit especially was an excellent one. Mr. Wyman Elliot says that it is the best plum exhibit ever made at the state fair. There were exhibited one hundred and ten single plates of plums entered for premiums, and the collections aggregated three hundred fifty plates, making a total in the plum exhibit of four hundred sixty plates. No information is at hand as to the number of varieties exhibited. Many of those shown in the collections were seedlings, though none of of extraordinary merit.

There were two hundred plates of grapes on exhibition, averaging much finer fruit than that exhibited last year. Mr. Gust Johnson showed the only collection, something like forty varieties, and, there being no competition, he received as award the whole premium of \$60 offered pro rata for collections of grapes.

In the class of professional collections of apples there were five competitors, of which J. A. Howard showed the largest number of varieties, having the maximum number permitted of seventy-five. Other exhibitors in this class were Messrs. Clarence Wedge, W. L. Parker, Frank Yahnke and P. H. Perry.

In the amateur class there were shown nine collections of apples, aggregating in all 295 plates. The professional collections aggregated 245 plates.

There were six lots of apples shown in the sweepstakes class. Mr. R. C. Keel and Mr. Frank Yahnke exhibited, in each case, the maximum number permitted, seventy-five. In all there were shown in this class three hundred and sixty-six plates.

There were seven collections of seedling apples on the tables, the principal one being, as for some years past, that from Mr. T. E. Perkins' seedling orchard, at Red Wing. Many of his trees are not bearing this year, so that only fifty kinds were exhibited. Amongst them were some fine looking fruits.

Special mention should be made of the exhibit from the Owatonna Orchard Experiment Station, T. E. Cashman, Superintendent, which consisted of one hundred fifty-five varieties. There were very few small specimens in this collection, and a

Exhibit of seedling apples from Owatonna Orchard Experiment Station, made at Minnesota State Fair, 1906.

Each plate showing a separate variety.



large number of them were of extra size and color. As a special report of this station will probably be made soon, no further reference to it will appear here.

There were eleven lots of apples shown in the ten variety class, amongst whom the \$30 pro rata premium was divided, there being comparatively little difference in these exhibits. All were exceptionally fine.

Fourteen pecks of Wealthy were on exhibition, exactly the same number that were shown last year.

In the single plate class the amateurs exhibited 170 plates of apples and the professionals 160 plates, showing a very equitable division in these two classes.

To summarize the above, including therein something over 400 plates of fruit that were used on the World's Fair booth in decorating the exhibit and elsewhere, there were shown altogether in the horticultural department, 2396 plates of apples. Adding to this 460 plates of plums and 200 plates of grapes and 500 plates of fruit shown in the Jewell Nursery Exhibit, which have in the reports of previous years been included in the sum total, brings the number of plates exhibited in the horticultural department up to 3556, a few more than the account of either last year or of the year before shows. To make a complete statement of the amount of fruit shown in the hall there should be added to this seventy plates in the Minneapolis Market gardener's exhibit, sixty plates in the St. Paul gardener's exhibit and 475 in the various county exhibits, an unusually large amount, indicating the increase of the fruit growing industry throughout the state. These figures put together give a total of 4161 plates of fruit on exhibition in the hall, besides the fourteen pecks of Wealthy heretofore spoken of.

Some changes were suggested by the exhibitors and others as advisable to be made in the premium list of this department, the most important of which is the doing away with the sweepstakes premiums so that exhibitors may in no case show any fruits other than such as grown upon their own places. The sweepstakes exhibits consist of collections of fruit, apples or plums, as the case may be, gathered anywhere in the state. In place of the sweepstakes might be substituted pro rata premiums for the best fifteen varieties and best twenty varieties, to be grown by the exhibitor. Suggestions along this line or in any other direction looking to the improvement of our premium list are desired from all interested in this subject.

There were only two nursery exhibits shown in the hall this year, the Jewell Nursery Co. holding their old stand in the center of the hall with a magnificent display of orchard products of Minnesota, either on plates or in glass. The installation was of the nature of a pavilion, which was occupied by the orchestra that furnished music for Horticultural Hall during the continuance of the fair. The pavilion was roofed over, supported by pillars, which with the roof were veneered with apples, mountain ash berries, etc., surmounted at the peak by an enormous artificial Wealthy apple. Too much cannot be said of the beauty of this display, which made a suitable centerpiece for a hall that was almost ideal in its arrangement and finish. Mr. B. T. Hoyt also made a nursery exhibit in the northeast corner of the horticultural department, and these two were the sole representatives of the nursery interests in Minnesota.

The hall was strikingly decorated in much the usual way with evergreens, with the exception of the posts on the agricultural side being decorated with wheat straw arranged spirally. The large doors and spaces above were also beautifully decorated with grains and evergreen.

Some changes had been made in the general arrangement of the hall since the previous year which removed certain objectionable features that stood in the way of a clear view of the hall, so that this year all the exhibits in the center of the hall were low, and everything of a high character was placed along the outside. The honey exhibit, which appeared in the west end of the horticultural department last year was removed to the west end of the agricultural department, and the space was filled instead with the florists' exhibits, as in past years. These changes contributed much to the improved appearance of the hall.

As will be seen by consulting the premium list, in November number, the judging was done entirely by home talent, Prof. S. B. Green being principal judge in the fruit department, and Mr. A. S. Swanson in the florists' department. Mr. E. Nagel, of Minneapolis, judged the amateur cut flowers, the exhibits in which class were very much in excess of any previous year, making the hall most beautiful with so large a display. The arrangement by which the amateur flowers were placed upon exhibition Monday and the professional on Thursday resulted in maintaining the flower exhibit fresh during the whole week

of the fair. Other judges in the fruit department were Messrs. W. L. Parker and J. A. Howard, on apples; Mr. A. Brackett on grapes; and of course Mr. Wyman Elliot judged the plums.

The Minnesota Rose Society, Mrs. F. H. Gibbs, St. Anthony Park, Secretary, maintained a very handsome exhibit of flowers on a large table between the west door and the center pavilion. This display attracted much attention, and we understand that the efforts of the Rose Society resulted in a considerable accession to their list of members.

The writer noted the presence of a few visitors from abroad, amongst whom were Mr. C. W. Gardner, of Osage, Iowa, late president of the Iowa State Horticultural Society; Prof. C. B. Waldron, president of the North Dakota State Horticultural Society; Mr. H. L. Patmore, an old member of the society from Brandon, Manitoba; and, last but not least, Mr. Ditus Day, the oldest member of our society, in his ninetieth year, who spent the whole week at the fair, living in a tent and enjoying every minute of his stay here. Mr. Day's home at present is with a son at Aurora, Iowa. He expressed his purpose to be at the next state fair if nothing interfered to prevent.

Only three florists showed plants at the fair this year. The Minneapolis Floral Co., E. Nagel and Son and John Vasatka, all of Minneapolis, but their displays furnished all the floral decoration needed, and through their courtesy we were able to decorate our fruit tables and maintain this valuable feature of the horticultural department at its best.

FRUITS, ETC. AT S. D. EXP. STATION AND ELSEWHERE.

PROF. SAMUEL B. GREEN, ST. ANTHONY PARK.

On August 31st I visited the state experiment station at Brookings, South Dakota, and found much there of interest in the horticultural division. Prof. Hansen was absent in Europe, but the director of the station, assisted by Mr. Haraldson, extended to us every attention. I found here many interesting plants, and the work seems to be going on in a comprehensive and sensible way. Reports from this station have been given to our society by Prof. Hansen from time to time, but some of the points that especially interested me were as follows:

A cross between the purple-leafed plum, (*P. pissardi*) with the sand cherry. Seedlings from this were strongly of the

sand cherry type, with a perfect purple foliage, which would seem to indicate that in this we have a desirable ornamental plant. It is certainly interesting to note how the purple-leaved characteristics of the plum appear in this progeny so closely resembling the sand cherry.

The Compass cherry seedlings did not seem to show any decided improvement over the original tree, and the fruit seemed very much inclined to injury by brown rot.

The Beta grape has stood here for several years without covering and is highly thought of. They are making a point of raising seedlings from it, but are also working for the improvement of the best types of native wild grapes that they have been able to obtain.

They have quite a large plantation of raspberries, from which have been selected those plants that are most desirable. Sunbeam is a variety which Prof. Hansen sent out last year as being a decided improvement in hardiness and general desirability for ordinary use in this section, and it looks well. I noticed, however, that there was appearance of anthracnose on the canes, but only to a small amount. The fruit is firm but of a purplish color that I fear will not take well in the larger markets.

The Minnetonka Iron Clad raspberry seems to be doing well in this section, even without winter covering.

The Siberian sand thorn (*Hippophae*) was fruiting heavily, its branches being perfect ropes of yellow fruits about the size of an ordinary rose hip, and is decidedly ornamental. It is easily propagated from seed.

The plum rot seemed to be doing a great deal of damage in this section to many varieties, and all the seedlings of Odegard plum were conspicuous by their loss of foliage, due to the presence of shot-hole fungus, to which in this section this plum seem to be especially susceptible.

An interesting plum cross that has fruited this year was that between the *P. simoni* and the common sand cherry. The fruit is flat, and the foliage glossy, like that of *P. simoni*.

Prof. Hansen makes a special point of starting many trees and plants used in his experiments in tubs and doing his crossing work early in the year in the greenhouse. These plants are kept through the winter in storage cellars and are not brought into the greenhouse until the latter part of the winter.

After the season becomes warm, these plants are removed from the greenhouse and put outside where they can be looked after. They appeared very healthy and gave every appearance of good care in handling them.

For the growing of apples in pots I noticed they were using the Paradise stock, which dwarfs the apples grown upon them and permits of their being readily grown in a tub the size of an ordinary butter tub. It is this stock that is used so commonly in Europe for dwarfing apples.

The new strawberry that Prof. Hansen sent out last year is described by Mr. Haraldson as not being especially well adapted for commercial purposes but well fitted for the general grower, who will not take much pains with it, and wonderfully hardy. I noted some of these vines in a recent trip near Lake Minnetonka, where they had made a tremendous growth, although the plants were in very poor condition when received. There is a great field for such a berry among our farmers.

About twenty years ago Prof. Keffer made a pioneer prairie planting on the grounds at this station which is now in charge of Prof. Hansen. We found much in this plantation that was of interest, showing something of the possibilities of forest tree growing under severe prairie conditions in Dakota.

On the way to Brookings I spent some little time at Co-teau Farm, the home of Supt. O. C. Gregg. My special object here was to note what had been done with the horticultural work that was started seven or eight years ago. The forest garden at this place, which was put out by the Central Experiment Station, is of much interest, the trees having made a tremendous growth. Among those that are showing up especially well now are the green ash, burr oak, mountain ash, box elder, basswood, Norway spruce, Scotch pine and dwarf pine. When this planting was made, the first evergreens set out were entirely killed during the winter, and such has been the general experience of those who have done planting on the prairies near this section. But after the windbreaks were established, so that winter protection was given to the evergreens, there was little or no trouble from this cause. Mr. Gregg set out a large number of European white birch seven or eight years ago. These are now five or more inches in

diameter and very pretty trees. I fear, however, it is a mistake to plant so many of a tree that has shown itself so far to be very short lived. But these trees show abundant vigor at this time.

The laurel-leaf willow is here showing up very well, although occasionally it has blighted. The golden willow and white willow are all right in every way for pioneer trees. Here we found fruiting the Hibernial, Anisim and a few other of our hardy apples, showing that it is quite possible to grow these fruits in considerable quantity in this section when wind protection is furnished. In an orchard that was set out without wind protection, all but the very hardiest kinds have disappeared.

On August 27th I made a trip to Markville, on Lake Minnetonka. At the home of Mr. S. R. Spates I found that he had taken great interest in spraying but was puzzled a good deal about the best way of spraying his plums. He had done the work thoroughly, but there seemed on some trees to have been some injury to the foliage. My own experience would show that in the matter of spraying plums there is much to be learned, and whenever it is undertaken with the ordinary spraying compound it must be done with much care and that in any case there is more or less liability of injuring the foliage. At this place and in raspberry plantations in this vicinity the King raspberry is showing up wonderfully well and seems to be the most popular kind. The Minnetonka Iron Clad is also doing well here. The Marlboro has run out, and most of the newer sorts, including the Loudon, have proven unsatisfactory.

Mr. Spates called my attention to what he believes a seedling apple, which is a fruit of good form and color and with good foliage. I noted that it closely resembles the Jewell's Winter.

At the home of Mr. Thomas Redpath I found the King raspberry doing well, and he had planted out a considerable area of same. His new seedling gooseberry was holding its foliage well and seemed to be healthy and vigorous. It is undoubtedly a variety of great promise. Here I saw a seedling apple of good form and color, with healthy foliage, that he had grown from some of the Gideon Wealthy seedling apple trees sent out by the State Horticultural Society a few years ago. Since the state fair I have learned that this variety has taken first prize this year for best autumn seedling.

EVERGREENS AND ORNAMENTAL SHRUBS FOR THE PRAIRIES.

(Read at annual meeting of S. D. State Hort. Society.)

PETER SIVERTS, CANBY.

My experience with evergreens on the prairie dates back to the year 1881; that was my second year in the country, and coming, as I did, direct from the beautiful and well kept forests of Denmark to those immense treeless prairies of southwestern Minnesota, where at that time there was scarcely a tree in sight anywhere, and if there was any attempt at tree planting it was, as a rule, merely a few cottonwoods—to say that I was homesick does not begin to express it. I said, why don't you plant some evergreens, and have something that will stop the wind and look cheerful in the long, dreary winter? Most everybody said they had tried it, but evergreens would not grow here, the climate or soil or something was not right for them. I made up my mind, however, that I would experiment a little myself and so procured a nice lot of conifer seeds from Albert Douglas, Waukegan, Ill. It proved to be very good seed, it sprouted quickly and made a fine growth, and it had good care. Next year the little seedlings were transplanted into nursery beds and left there for three years, and my home in Canby is today surrounded by trees from those tiny seedlings of 1881, which are now sturdy, robust trees twenty-five or thirty feet high and nobly defy the raging winds and howling Minnesota blizzards. That was my first venture with evergreens on this side of the Atlantic, and although I had intended to make a business of raising them to sell the people were so slow to be convinced that evergreens could and would thrive on these open plains, if handled intelligently, that I was discouraged and drifted into other business.

However, after my trees had got quite large, and they saw what fine shelter they might have had, if they had only planted when I did, there began to be a demand for home grown trees; so five years ago I again took up my old love for propagating evergreens. The varieties that I have experimented with the longest, and which have given the best satisfaction, are the Austrian and Scotch pine, and the white and Norway spruce; but later have tried white,

Pinus Ponderosa on place of Mr. Andrew Norby, Madison, S. D.

Norway, ponderosa, mountain and jack pines, and the Douglas, Black Hills and blue spruce; also the balsam fir, red cedar and arbor vitae and European larch; all of which are doing well and seem to be well adapted to prairie planting except the white pine and arbor vitae.

Now from my experience I would advise the farmers on these vast South Dakota prairies to commence planting evergreen wind-breaks as soon as possible. Plant at least one row on the north and west side of your house and barnyard, not too close to them however; and if you have old groves of deciduous trees, plant on the north and west side of them, as they are sure to be too open and let too much wind through during the winter, when you need shelter the most.

Plant a single row, trees 6 or 8 feet apart in the row; have the ground in as good shape as you would for corn; get your trees

from your nearest nursery; go after them with team and wagon if you can make the trip in a day; get Austrian or Scotch pine or both, 12 to 18 inches high once transplanted; plant them the next day if possible, if not, heel them in, in a shady, moist place; of course you should do the same if they have been shipped to you. When ready to plant choose, if possible, a cloudy, damp day; take 25 or 30 trees, puddle the roots well in a tub of mud, put them in a box fitted with a handle made of an old barrel hoop or something similar, put a little wet straw or moss over the roots, and you are ready to plant. I prefer to have a man dig the holes just ahead of me, which a good man can do if the ground is not too hard. I dig the holes about 14x14 inches square, about 12 or 16 inches deep. Plant as you would any other tree, putting a little loose dirt in the bottom of the hole, spreading the roots out well and packing the earth very firmly around them, and finish by tramping it solid with your feet; see that the little tree stands straight and firm so the wind will not be whipping it about. I generally plant from three to six inches deeper than the trees stood before.

The most important thing to be borne in mind when handling evergreens is that the roots must never be allowed to dry, not for a second.

Now as to the after care: simply keep the ground well cultivated and free of weeds for at least four feet on each side of row the first two or three years and always be careful to break up the crust formed after heavy rains. For this work I like the 12-tooth drag cultivator the best of any I have used.

Mulch your trees in the fall after it freezes up (I prefer flax straw to spoiled hay) remove mulch in spring and cultivate as before. After three or four years the trees can be mulched heavily and allowed to take care of themselves.

Although it may seem to be a good deal of labor, it virtually takes but a short time to cultivate a row of trees like that, and when your trees get to be eight or ten feet high you will not regret the little care bestowed upon them while they were small; and if every homestead were surrounded by such a shelter belt, what a transformation it would make in the appearance of the landscape during the long, bleak winter months, to say nothing of the comfort it would afford to man and beast.

Now, while you are about it, scatter a few evergreens about the house for ornament, but here I prefer to use trees a little larger,

Specimen of Douglas Spruce, growing on place of Mr. Andrew Norby, Madison, S. D.

say from $2\frac{1}{2}$ to 3 or 4 feet, as they are not so apt to be run over, and also give good effect immediately. Use as many varieties as possible, plant in groups and clumps of irregular shape and number; don't neglect to have a few blue spruce for single specimens here and there. These trees should all have been at least twice

transplanted, be stocky and well shaped; the holes for them should be dug large, from 3 to 4 feet in diameter and 18 to 24 inches deep: plant carefully and leave the ground basin-like around the tree after it is well tramped down. This space around the tree should be stirred up occasionally with a hoe, and spaded out wider every year. In case of groups it is generally better to have the whole space between kept open; in a dry season it may be necessary to water occasionally. Avoid planting too close to the house and directly in front; it is generally safe to plant liberally in the rear and on one side of a dwelling. Mulch in the fall with spoiled hay, flax straw or any other straw.

While the evergreens are pretty, if we had nothing else around our home they would get monotonous, so it is well to have a fair proportion of deciduous trees for variety and shade and, above all, plenty of flowering shrubs. There is nothing more effective in summer than well arranged clumps and borders of shrubbery, and as they are so cheap, easily planted and taken care of there is no reason why every family cannot have at least a fair collection of them. The lilacs are perhaps the hardiest shrub we have and deserve a place in every yard, but do not plant too many of the common purple lilac as they spread all over; choose rather the Persian, white and Chas. X. As it will take too long to describe all the different shrubs, I will simply name those which from experience I have found perfectly hardy and satisfactory for this western country; and first of all I will name the Spirea Van Houtii, "the queen of all the spireas;" then the Snowball, High Bush Cranberry, Hydrangea, Paniculata Grandiflora, Honeysuckle, Mock Orange, the different varieties of Barberries, which however are a little tender but don't root kill. The Caraganas, or Siberian Pea Tree, the Choke Cherry, the common and Golden Elder, Flowering Currant, Rosa Rugosa, or Japanese Rose, Red Dogwood, Nine Bark, or Golden Spirea, Snowberry, Buffalo Berry, Russian Olive and English Buckthorn for hedge.

Climbing Vines—Of these I know nothing better than Virginia Creeper, Trumpet Honeysuckle and Wild Grape, which are very effective for covering unsightly objects that cannot, perhaps be hid from view any other way. While in Europe a year ago I saw the Virginia Creeper used very extensively by landscape gardeners everywhere.

Perennial Flowers—These are especially suited for the busy farmer as they require very little care when once planted, and in-

crease in beauty year after year. By all means have a bed of Peonies and one or two of Phloxes, a few high Lilies, Corn Lilies, Irises, Larkspur, Columbines and Asters.

And to sum it all up, beautify your home. You will never be sorry for it, and I know you South Dakota people can do it, for the prettiest farm home that I know of in my neighborhood is located in South Dakota.

CELLAR STORAGE OF ORCHARD FRUITS.

H. W. SHUMAN, EXCELSIOR.

The most important thing of all in growing orchard fruits is how to harvest and store them for winter use. I first started to put my apples in the cellar, packing them in bushel boxes and barrels; then I experimented by wrapping them in paper and putting them in dry sifted ashes, but the atmosphere was too dry, and the apples would wilt. Then I built a root cellar on an east slope.

This cellar is a very crude affair made in a hurry, but it has given excellent results, almost as satisfactory as a cold storage plant. It is fourteen feet long, nine feet wide, and five feet high, with a ridge pole through the center and poles, closely placed together, extending from this to the sides of the walls, which form a basis for the roof. A thin covering of hay or straw with about a foot of earth is put on that, and then a load or two of hay is spread on top of the earth every fall to keep the rain out. The doors are double and made tight, and the last and most important thing of all is the stove pipe which regulates the circulation and moisture in the cellar.

The fruit that I store is mostly fall and winter varieties of apples, and I also have room for apple roots and grafts, vegetables and celery for home use. The apples in my root cellar are the Wealthy, Malinda, Ostrekoff, Ben Davis, Brilliant and a few other varieties. With these apples our table is supplied until June and a great deal longer if the stock holds out. I stored forty boxes of Wealthys last year in the cellar and took out the last box in April, and it was in fine condition. What were these apples selling for last winter or apples like them? Thirty cents per dozen. Think of it! What are they selling for today at the grocery store? Seventy-five cents per peck. I am glad I have a small supply on hand.

Now in gathering my fruit for storage I find there is a big difference in the time of gathering and that the seasons are differ-

ent also. I have come to the conclusion that Wealthys keep best by picking them from the trees after they have colored up well. This will necessitate careful watching and gathering them at frequent intervals. The later apples are all picked from the trees just before cold weather. In packing apples for winter I use bushel boxes and also berry box cases, placing the fruit in layers, without wrapping paper around them. The boxes are not placed on the ground but on a shelf two feet above it, the top boxes being covered with paper or covers to keep off the mould which will sometimes form towards spring. Never line your boxes with hay, thinking you are giving the apples a soft bed, for they will surely catch the hay fever before spring.

Last winter I pitted two bushels of Wealthys outside of the root house, and when I went to uncover them in the spring, all except one peck were spoiled, and this peck was nothing extra in quality, for they had lost their crispness and flavor and tasted earthy.

This cellar being in the ground without a board floor and on walls except a clay bank and one foot of earth on the roof, Mother Earth supplies the necessary moisture. The temperature runs from 38 to 40 degrees through October and November, with the two doors closed and the six-inch ventilator open. But as the season advances to good, stiff old Minnesota weather, the temperature keeps dropping till it reaches 32 to 36 degrees, but never yet has it gone low enough to injure the fruit. When the weather increases in severity the ventilator should be closed, and when it moderates it should be opened up again. Taken as a whole, this root cellar, though crudely built, is an ideal place for fruit storage and has no expense attached.

Mr. Busse: At what time do you put them in the root cellar or storage room, at the time of picking or later?

Mr. Shuman: So far we have gathered our apples and put them in an outside shed, but in the case of the Wealthy I find they wilt, so that by the time they are put in the cellar they are pretty badly wilted.

Mr. Busse: When did you put them in the cellar?

Mr. Shuman: We had in the neighborhood of the cellar a wagon shed, but that warm weather in September created rot and spotted them, and we had them carefully picked—at least I gave them instruction to do so; but I found after they had been in a week they had spotted so badly we had to repack all of them. I found a press and made some of them into cider. I would like to know whether any one has had experience in placing them in a stor-

age shed or granary? A good many of those apples were Patten's Greening, and some were Wealthy and other varieties.

Mr. Elliott: If you had no storage room or cellar, what has been your experience in placing them on the ground and covering them lightly with straw or hay?

Mr. Shuman: I found that was better than anything else; that is as near nature as we can get it. Take an apple from any tree that falls on the ground and lies in the grass, that apple is as good when it freezes as when it fell from the tree.

Mr. Geo. J. Kellogg (Wis.): What is the size of your cellar?

Mr. Shuman: 9x14. Apples will keep better in a root cellar because an ordinary cellar is too dry. I do not think it would do, because you have got to have moisture to keep apples.

Mr. Henry Haggard: What is the special advantage of an outdoor cellar over an ordinary house cellar?

Mr. Shuman: A house cellar as a general thing is too dry.

Mr. Haggard: Mine is damp, and I can keep Wealthy till March or April although they lose somewhat in flavor.

Mr. A. J. Philips: Have you a separate cellar for fruit and vegetables?

Mr. Haggard: I have not.

The Chairman: I have repeatedly had apples sent in in which I could taste potatoes, onions, cabbage and other vegetables, and that is very likely the reason they were off flavor.

Prof. Hansen: It is along the same line exactly; if you are where they have cabbage and onions and rutabagas you will have the flavor of the whole family. (Laughter.)

Mr. Seth Kenney: In putting boxes of fruit in the cellar is it better to pack them together as closely as possible or should a little space be left between the boxes?

The Chairman: I would leave a little space between them.

Prof. E. D. Sandsten (Wis.): You spoke about wrapping some of your apples in paper. How do they compare with the others that were put away?

Mr. Shuman: I have three bushels in the cellar now that were picked early, wrapped in paper and set in an outside shed. Those that were in the root cellar were wilted, and a number were taken out, but those wrapped in paper were all right.

The Chairman: They will keep better than without.

Mr. Kenney: My apples are as good without paper.

Mr. Philips: My wife says an apple wrapped in paper six weeks is not fit to eat.

Mr. Preston McCully: I agree with Mr. Philips on that point, but if wrapped in waxed paper they are not affected at all.

Mr. Shuman: I had some put in paper sacks and packed

in a box and there were some lying on the outside that were not wrapped, and those lying outside without paper were the best. They kept two or three months.

The Chairman: Mr. McLeran has a fine root cellar; we would like to hear from him.

Mr. F. B. McLeran: I make a practice of storing from one to two thousand bushels of vegetables every year, and the commission men tell me that the vegetables they get from me are the best they get in April. My cellar is a root cellar built of concrete and is entirely covered with earth. My theory is this: a cellar covered with earth is a great deal better from the fact that any change of temperature is gradual. If any sudden change takes place it takes two or three days for the outside temperature to affect that on the inside: I took a thermometer in the cellar and watched it very carefully, and it kept at just 42 degrees. We have eighteen inches of soil on top of the logs, and that is the only covering it has in the spring when the snow is on. But in the spring before the snow is gone and while it is still frozen, I put on a covering of manure with the idea of retaining the cold as long as possible, and by retaining this frost it makes the cellar practically a refrigerator. In the fall I leave the door open during the day and cover the opening with burlap to keep the light out, and I try to cool the cellar off as rapidly as possible. In the spring when the weather begins to get warm I open the door at night and keep it closed during the daytime. When the weather gets warm, I am as particular to keep the door closed to keep the cold in as I am to keep it closed to keep the heat out.

APPLE BLIGHT AND WHAT IT IS.

EVERETT SPEAR, NORTHFIELD.

Apple blight is a fungus that first breeds in the soil, and is in a dormant condition most of the time. It is very active in wet, hot weather, and during this time it starts out on its work of destruction.

It seeks out broken or bruised roots and gets into the sap and thus into the tree, where it remains ready to spring into activity in wet, hot weather. It breeds rapidly as it goes on with its work in the sap. In its most virulent stage it oozes out through limbs and leaves, drawing insects and worms, that feed on the fungus and the sick, weak victim, the tree.

The fungus is the least noticable where there is the most potash in the soil; hence, I conclude that potash is a very important remedy, as well as a preventive.

Most every house-wife knows that soap suds is beneficial to

her favorite apple tree when poured around the roots. It is the potash in the suds that keeps the tree healthy and comparatively free from blight.

Potash is the only known fungicide contained in our soil. It has in the past helped us to produce the most perfect cereals and vegetables and fruits, and I believe in the future it will enable us to raise apple trees as hardy as the oak if properly applied.

I have stopped cultivation in my orchard, and will apply potash to the soil and will spray with potash or caustic soda.

I will inoculate my trees to kill all germs in the sap, using care and noting results.

I hope to be able to report to this society at some future time the results of my labor and investigation. If I fail I will report failure, and if I succeed I will so report, and will be glad to give to you the benefits of all knowledge obtained.

TWO HOURS WITH LUTHER BURBANK; HIS WORK AS AN ORIGINATOR OF NEW FRUITS AND ITS APPLICATION TO MINNESOTA NEEDS.

PROF. N. E. HANSEN, BROOKINGS, SOUTH DAKOTA.

I do not care to go into a detailed discussion of Mr. Burbank's work, as so many articles have appeared recently in the papers and magazines, and Mr. Harwood, formerly a Minneapolis journalist, who is spending some time in California, has just written a very interesting book on the subject. So I will simply give you a pen picture of Mr. Burbank as I saw him. It is harder to see Mr. Burbank than it is to see the president of the United States. I will tell you why. He has had over six thousand visitors and as many letters this past year from all parts of the world. He is a kind hearted, conscientious man and tries to do justice to all this extra work. He is a slender man, weighing perhaps 140 or 150 pounds, a bundle of nervous energy, absolutely without mercenary motives, and cares nothing about money.

He was born in Lancaster, Mass., March 7, 1849, and in 1875 came to California from Massachusetts to begin this inventive work. He is the world's master in creative horticulture today. This exaggerated newspaper talk you see about him is without his authority; the correspondents do this because they must make everything

sensational. But it has served a useful purpose in stimulating interest in matters horticultural.

Residence of Luther Burbank, Santa Rosa, Cal.

I am informed that he was offered \$5,000 a year by the Leland Stanford University, of California, to move his whole plant to the university and become a member of the faculty. But Burbank insists on being perfectly free. He has declined numerous offers, but he prefers to remain at home and take care of his mother, who is ninety-one years old. At the time he quit nursery work in 1893 he was making \$10,000 a year, and he gave that all up so he could put his entire time into this creative or inventive work in horticulture. Carnegie is now giving him \$10,000 a year in quarterly installments. He has as high as twenty-four men working for him, but he cannot delegate any of his creative work any more than Shakspeare or Longfellow could have had assistants. He has worked with 2,500 species of plants and is raising many thousands of seedlings each year. He has a wonderful faculty of picking out plants in the early stages of growth to save time. He is unable to impart information as to how he does this, but it is claimed by his friends, those who know him best, he has the power to pick out seedlings at a very early stage of their growth that will give good results, and he thereby saves a great deal of time. I went out to California to find out something the magazine writers had not got-

ten hold of, what is the secret of his method of getting quick results. I was a little apprehensive that I would have no chance to learn. He is a man who will not sell his time for \$250.00 an hour. The moments are as diamonds to him. He is very jealous of his time, but all the same he treated me royally and did not charge me a cent. I took pity on him in his overworked condition and did not want to be with him too long, but thought I would rather come again.

Original tree of Burbank Plum. Millions of trees have been grown from it.

His secret, as I see it, is the application of the law laid down by Darwin in regard to the variation of plants: "Excess of food causes variation." He has three or four acres around his house, and this made up into beds, and the soil is filled as full of commercial fertilizers and plant food in general as it is possible to get it. This "excess of food causes variation." Take a wild plant from its accustomed environment where for thousands of years it has acquired fixity of habit. Put a plant of that nature in this highly favorable environment, and it will soon show variation. This is the practice he follows with plants, and it saves an immense amount of energy and time. Through ages of natural selection a species of plant acquires characteristics which it transmits true to seed. This

fixity entitles it to the rank of a species. We plant the seed of a wild flower, and at first we get but little variation. It has acquired a fixity that is repeated in its offspring. In its new environment the plant soon begins to vary. Burbank's success lies in his ability to determine this initial variation at an early stage of the work. He can induce variation to a marvelous degree by high feeding. Furthermore he is very skillful; his mechanical execution of the work is perfect. He showed me a small knife, with a very thin blade, with which he removes the stamens before the flowers open. The stamens are not always removed. Burbank said there is no need of it if the stigmas are closely watched as they become receptive and with the pollen applied at the right time there will be no self-pollination.

Burbank's work with the cactus was especially interesting. He has developed by crossing a spineless cactus that is good for food. The Minnesota wild cactus was made spineless by selection, and by crossing some five different species of opuntia this thornless cactus has been developed. What is the use of the spineless cactus? The leaves are good fodder for stock, and the fruit is edible for man. It flourishes without irrigation on dry deserts, and enough cacti could be raised to feed the population of the earth. So this theory of Malthus that the population is increasing faster than it can be fed is a visionary idea. Mr. Burbank asked me to send him some South Dakota cactus. A few days ago I was out in the wilds of the Missouri river hunting large fruited wild plum trees I had previously marked, and I found some of our South Dakota cactus and intend to send some soon to Mr. Burbank. The cactus may not be introduced in Minnesota, and yet there are some sandy lands where the cactus would grow well.

Mr. Burbank has also worked with California apples. He has raised thousands of seedlings, and I had to admit that some of the apples were equal in flavor and color to the Spitzenberg. His contention and reasoning was this, that if such apples can be raised in California, where apples range low in quality, that these same apples taken east to a better climate will be the finest apples in the world. I must admit the idea appears very reasonable. We are still raising apples that are not good to eat. They are good to look upon and sell for a good price. I refer to the Ben Davis type and some others I might name.

Burbank also showed me the "pomato," some combination of a

tomato and a potato, but I was not there at the right time to test the quality of the fruit. He top-grafts largely. He had over 75,000 new plums in bearing this year, at Sevastopol, a few miles from Santa Rosa, besides at his little place, where he has fifteen acres tightly fenced. I could not wait for Mr. Burbank's regular visiting day but saw the long rows of trees from the outside, just as shown by the published photographs. Here are many kinds of plums top-grafted in every tree. The original tree is no longer saved. From the seedling fruits he saves one or two scions only and top-grafts them. At Santa Rosa the season for top-grafting is a long one. If a scion does not bear the second year, he cuts it off and uses that same stock again. That is the end of it. He showed me one apple tree that had 126 kinds of apples on it. He took a pole and knocked some of them off for me. That reminds me that in southern Russia, between Kief and Odessa, I found a man who had over nine hundred kinds of apples in his orchard, which consisted of only about two acres.

Mr. Elliot: Mr. Burbank speaks of hardiness; how does he know a thing has hardiness? Did you find out how he injects hardiness into his fruit?

Prof. Hansen: The only way he expects to get hardiness is to cross with species that have hardiness. Some of Burbank's plums are a combination of six different species. By Mendel's law of heredity, I believe, hardiness may be transmitted the same as any other character. There is no guesswork about it. You can take three or four species and make all manner of combinations of their characteristics. If you do not have hardiness somewhere in the ancestry—for example, if you plant seed of the type of the Ben Davis to secure a hardy apple—you will have disappointments only as the result. You must have hardiness somewhere in the pedigree. If I can get that fact thoroughly fixed in your minds I think it will be well worth my effort today.

Mr. Elliot: In case of this basket of Malinda, raised by top-working the Duchess, would there not be a tendency to have hardiness injected, or would that be chance?

Prof. Hansen: Here is good and safe ground: The Malinda came to Minnesota as a one-year seedling from Vermont, and we can go back no further in its ancestry. But if we could go back we might find its ancestors came over in the Mayflower. But at any rate it dates back to a milder climate in western Europe, where they never encounter as hard winters as here. If you were to plant pure Malinda seed you would not get hardy apples in a thousand years. The Duchess dates back to Russia. The Russian apples are indigenous to Russia, dating back thousands of years, long before Tamerlane came out of Asia with his

conquering hosts. Hence we have true hardiness in the Duchess. Now we may save time by making that cross by hand between the Malinda and the Duchess, instead of planting seed from Malinda top-worked on Duchess. We are sure we are getting a good combination there. We get the long keeping quality of the Malinda and the hardiness of the Duchess. In order to save time I am doing much hand-crossing, but it is slow and hard work. But then there is the law of Quetelet, if you raise seedlings enough you are bound to get a prize. There is another thing to be gained in large numbers; you might cross the Malinda and the Duchess and get ten thousand seedlings and still get no two alike; there might be a general resemblance, but they would all be different. It is just the same as you find it in the old fashioned family. The children in one family differ in ability. Benjamin Franklin was the brightest one in a family of fourteen children.

Mr. Elliot: Here is another question—I am after information. That (indicating an apple) was produced from the seed of the Malinda. Can you give us any indication where the cross came from?

Prof. Hansen: I would need to know the names of all the apples that were raised within five miles of it. (Laughter.) How far can a bee carry pollen?

Miss Moeser: I think three miles is considered about the greatest distance.

Prof. Hansen: I should say they both had indications of Romanite blood but do not know where they got it.

Mr. Elliot: Could you trace the Romanite in the Wealthy, Duchess, Haas and Tetofsky?

Prof. Hansen: That is all guesswork, we have not done enough artificial crossing. It might resemble the great-great-grandparents that were brought over in the Mayflower. In crossing it sometimes goes back to the twentieth generation. That is the delightful uncertainty of the thing.

Prof. E. P. Sandsten (Wis.): I would like to ask Prof. Hansen if we were to start with the seed of the Malinda and continue selecting for hardiness in the seedlings for a thousand years whether it would be any hardier than it is today?

Prof. Hansen: That is exactly the position I am taking. We know the Malinda dates back to the mild climate of England, or where the temperature does not get as low as here. According to DeCandolle, plants have not advanced one hundred miles northward of their old limits in historic times.

Mr. Philips: Is there any possibility of getting any hardiness from this artificial crossing? Do you get any hardiness of the Duchess type in the seedlings.

Prof. Hansen: Yes, by crossing hardy varieties with hardy varieties, or hardy with tender, you will succeed. But if you cross tender varieties with tender varieties, you will never succeed.

Mr. J. M. Underwood: I did not hear Prof. Sandsten's question fully answered by Prof. Hansen about the adaptation of plants, as to the effect of environment on an apple grown here in Minnesota for a series of years or the growing of seedlings from that apple for a series of years and selecting the hardiest in that way. Would the Minnesota environment, the Minnesota climate, produce a change in the variety so as to secure hardiness, the same as when as we go to Illinois, as I did last spring and bought a nice variety of seed corn. It is not thoroughly adapted to our climate here in Minnesota, but I am expecting that by the selection of the first ripened ears of that corn this fall and planting it the next spring, and continuing to do so for a series of years, the character of that corn will be so changed that it will finally be thoroughly adapted to growing in Minnesota. As I understand, Prof. Sandsten wants to know whether a similar process would take place in fruit.

Prof. Hansen: About Indian corn—in its native home in Peru and Central America it has been growing for thousands of years. In its native home it gets to be twenty feet high and takes seven months to mature. In the north it grows five feet high and takes three months to mature or less. In northern Europe where the nights are cool you see corn raised as an ornamental plant in the center of a flower bed. They cannot ripen corn and will not be able to do so. Corn has not changed in its demand for semi-tropical heat. You have never seen corn that will stand frost like cabbage. Cabbage has been grown for thousands of years on the frosty seacoast of Europe. We will never have corn that will stand frost and cool nights like cabbage. The box elder from the south will not succeed in Canada, as our Canadian friends have learned to their cost. The box elder from the south will winter-kill. You can tell a southern from a northern box elder by the botanical characteristics, but when you get a southern box elder up here it will kill to the ground. Nature has adapted the box elder, red cedar and others to immense areas with widely varying conditions. The Russian government has found that the Scotch pine from western Europe is an utter failure, while the Scotch pine of Siberia is a perfect success. How many thousand years did it take nature to do that work, and is there any use in man taking up that work that would take thousands of years to finish? We must take advantage of nature's work, and that is why I insist that in our apple work we must study the situation, and we must not select tender varieties, but only hardy ones that will resist the climate. All needed hardiness must be there when we begin, the hardiness that has been there for thousands of years.

Prof. Sandsten: I do not disagree with Prof. Hansen in his general theory, but if we look at it in a broader aspect I think we will have to admit that plants adapt themselves to their en-

vironment. If they did not our existing flora would not be as it is. It would not be advisable to plant seedlings of a tender variety—but the general law of adaptation must govern, and we cannot get around that point.

Prof. Hansen: I admit a change takes place. The box elder has adapted itself to climate varying as widely as Virginia, Arkansas, Minnesota and Assiniboia, but is there any use for us to attempt to do the same thing in the case of the apple or any other fruit? We should take advantage of nature's work and not start on an experiment that will take ten thousand years to finish. That is why our reliable seedsmen are careful about their tree seeds. I was talking with one of the foresters at the forestry congress. It was a new idea to him. He did not think the species extending over a wide area differed so greatly in hardiness. He had not come in contact with forty below zero. We had better secure hardiness to begin with in our fruit trees.

Mr. Philips: How much more will the Duchess stand than the Malinda?

Prof. Hansen: I had a Malinda top-worked on Whitney kill clear back to the graft in the winter of 1898-99, when Duchess was uninjured.

Mr. O. F. Brand: I want to ask Prof. Hansen whether seeds taken from certain varieties, say the Duchess—and supposing the Duchess of Oldenburg had been propagated for seven successive generations in a temperature that would not fall below thirty degrees—and then take seeds from another class of Duchess that have been propagated for seven successive generations where the temperature has gone below forty degrees, would there be any difference in the hardiness of those seedlings?

Prof. Hansen: I think there would not be any decided change. The Duchess may be two hundred years old from seed, but it is the same now as it always has been, unless a case of bud variation occurs. We had that question up two years ago, with the Wealthy. Mr. Gideon's son insisted that the Wealthy had varied under propagation and brought the society sprouts from the original Wealthy tree to test the matter. But practically apples do not vary under propagation, the difference does not usually amount to anything. It is just so with the Ben Davis; it is the same as it was in the beginning. There are no changes; it is simply a subdivision of the same individual by budding and grafting. I am strongly of the opinion that the Duchess individual is the same now that it always has been. An apple must be born again, as the minister says, if you want a real change. If fruit trees varied greatly from the bud it would be very uphill business for the nurserymen; it would be necessary to breed apples true to seed the same as corn. And that would be slow work, because a generation in the apple is about ten years, while in the case of corn one year only is required.

ADVANTAGES TO GROWER AND DEALER IN A FRUIT GROWERS' ASSOCIATION.

G. H. BOOTH, LAKE CITY,

Manager of Excelsior Fruit Growers' Association.

As this is a Minnesota society, the writer will confine himself to Minnesota fruit associations. And as these latter days are days of combination and united effort, it will not be necessary to give any arguments to show that a fruit growers' association is a benefit to its members. Each new association, as it springs into existence, is sufficient evidence of this. The purpose of this paper, therefore, will be to enumerate some of these advantages.

Since the dealer depends upon the producer, we shall take up first reasons why fruit growers band themselves together to market their produce as a whole through one management. We can lay down this principle at the beginning, namely: that the prime object of such associations is to eliminate competition rather than to control the product. To make this plain let us suppose that on some bright morning in the midst of the Minnesota strawberry season, one hundred of the members of a certain association decide that on that day they will market their own berries as individuals and cut loose from the association. The result will be that each consumer in that vicinity will be so often solicited to buy that he will decide not to buy at all unless he can name his own purchase price, and this will be so small that the growers will soon begin to talk about plowing up their strawberry beds and sowing them to timothy seed. Thus we see that the effect of an association is not to limit the amount of the product but to eliminate competition. In truth, a well managed association will so enlarge the range of its markets that the amount of fruit produced each year will steadily increase, until each member has reached the maximum acreage at his command.

Another reason why fruit growers form associations is to save time. One person might easily spend a half day in selling a hundred pints of raspberries and still not realize much more for them than he would have done through the association; while this half day of time if spent in cultivating or overseeing the raising of more berries might have yielded another hundred pints.

Fruit associations have still another advantage and that is, the saving of trouble and worry to their members. The ease with which members can dispose of large quantities of produce through

an association is very attractive to many. We are all more or less in favor of taking things easy, and if one can haul in to his association a hundred cases of strawberries per day, and if by the simple act of taking a receipt for this fruit he can shift upon the manager the responsibility of finding a market, selling the fruit and collecting the price, this is very likely to be the thing he will do.

Again this is an age of concentration and specialization of effort. Through fruit growers' associations, by the economic principle of division of labor, which is giving to one person but one kind of thing to do, both expert raising and expert marketing of fruit may be secured. And this is no small advantage, for it often happens that a grower who raises the finest quality and best grade of fruit makes a financial failure in the marketing of it.

Competition is so keen that successful marketing requires the closest and most constant study of conditions and the exercise of the keenest business ability. Now, the successful grower has his time pretty well occupied in finding out what varieties to choose, what kind of soil they need and what degree of moisture, how to till, prune and spray them both for insects and plant diseases, in securing and overseeing pickers and getting the fruit graded properly and packed in a neat, cleanly and attractive manner. In fact, his time is so fully occupied with these things that he is willing indeed to leave to the association manager the task of keeping in touch with many different markets, of estimating the total visible supply of each kind of fruit for each day of the week, of finding out the date of the expected arrival of three carloads of Hood River berries from the Pacific coast, of learning how many people are expected at a certain convention in a certain city and how many bushels of his surplus they will eat, and many more similar details of marketing. And then there is the question of John Henry Jones & Co. Are they good financially, or will their account be discounted fifty per cent? And how shall we get our pay from that man "Spoopendyke"? What shall we do with this shipment that has been refused? How shall we persuade the express company to allow that claim for damage in transit? These and a score of other difficulties the grower is delighted to turn over to the business manager of the association. And he does this wisely, for the growing of fruit and the marketing of fruit are two distinct lines of business. And while the successful grower is

busy solving his problem of how to produce the most and the best from his available acreage, the successful manager of an association is equally as busy in solving *his* problem of how to get the most money for that which is delivered to him. Both these tasks taken together are too much for one person to do well.

Notwithstanding these advantages there are certain people who should not join an association: such as, for example, those who have a minimum amount of fruit and a maximum amount of time. Such people should spend their time in retailing their fruit themselves, thereby utilizing their spare time and relieving the association of the danger of unmerited criticism. Then there is another class of people who have some fruit but who always seem to be afraid to trust the association with it. They are always inquiring after "returns," and seem to forget the fact that it takes a few days to market the fruit and get in the returns.

The writer's experience, however, with members is that the great majority of them fully appreciate the advantages of an association and are reasonable in their demands; and we would pay a special tribute here to the members of the Excelsior Fruit Growers' Association, who have stood by their manager most loyally for the past three years, and by careful packing and grading have won for their fruit a most enviable reputation.

Now, on the part of the dealer, it is manifestly to his advantage to buy direct from the association. If he values fresh fruits, where can he get them fresh as direct as from the farms where they are grown? The middleman may be able to supply him, but he must get his supply from the grower, and some time at least is consumed in doing this and in transit from the farm to the middleman. Now this time is subtracted from the time the fruit will keep after it reaches the dealer, and this time, although but a few short hours perhaps, may determine whether the dealer makes a profit on the shipment or suffers a loss.

Again, when the order is sent direct to the association, there is the least possible amount of handling, loading and unloading and hauling back and forth by expressmen and draymen, and this is of great advantage to the dealer. This rough handling of ripe fruits, as you know, may easily reduce the profits to nothing, and is a matter which every grower and dealer in the state of Minnesota should watch most closely. Let every dealer demand damages for loss by careless handling, not from the grower but from the trans-

portation companies, and let every grower pick and pack his crop so carefully and honestly that he can testify upon oath that it was properly done, and then this throwing around of fruit by the express companies can be stopped.

Fruit bought direct from an association sells quicker and easier than any other. "The test of the pudding is in the eating." The consumer knows the freshest fruit, for he eats it, and the freshest fruit is the kind that sells easiest; therefore the dealer who buys direct can sell more and sell it quicker and sell it easier than his competitor who buys from the middleman.

Fruit bought direct will also bring more money than any other and costs less. It will bring more because, other things being equal, the freshest fruit has the least waste and will bring the highest price; and, it costs less because the middleman is not handling the business for nothing, and it is universally admitted that profits on all commodities are paid by the consumer and not by the producer—just as government duties are paid by the consumer and not by the producer.

Then again, the dealer is more certain of his supply if he buys direct. If there is any supply at all, the Minnesota associations will fill dealers' orders first and with the best fruit.

Finally, the dealer who buys direct is able to secure not only every advantage which he could by dealing with the middleman but many more besides, for the middleman is dependent upon the grower.

Perchance this paper may sound a little too encouraging for the association. If so we would say in closing that we would not advise the organizing of any more associations in the state of Minnesota without the most careful investigation. Both North and South Dakota, which is our best retail territory, have placed many orders for nursery stock during this past summer, and they will soon be raising their own fruit; in fact there is already a fruit association in South Dakota two years old. Wholesale shipments from Wisconsin, Omaha and the Pacific Coast have also increased during the past season. And, worse than this, some of our Minnesota associations, laboring under a wrong idea of the laws of commerce, have begun to cut each other's prices. Altogether a variety of conditions are arising which are by no means encouraging, and the new association will meet with many discouragements before success is assured.

THE ORCHARD EXPERIMENT STATION AT OWATONNA.

A. W. LATHAM, SECY.

A delegation from the executive board of the society, consisting of Messrs. Wyman Elliot, J. P. Andrews, Prof. S. B. Green and the writer, selected the only pleasant day of the week following the state fair to visit the orchard experiment station located at Owatonna. We found this thriving city in the throes of a street fair, one feature of which was a fruit exhibit, made in large part by the two successful nurseries there, one under the management of Thos. E. Cashman, the other under that of D. M. Mitchell, the exhibit assisted largely, however, by the farmers and fruit growers of the neighborhood. Larger and finer specimens were exhibited there than at the state fair a week previous, which is easily accounted for as the fruit for the Owatonna exhibit was gathered some two weeks later than that shown at the state fair. Some very handsome specimens of Wolf River were on exhibit, also Wealthy, Patten's Greening, Northwestern Greening, etc., were displayed in abundance. The other features of the street fair were by no means absent, but our committee was too busy to take in the turn-tables and the wheel and a lot of other things that have been found important accessories on these holiday occasions.

The orchard station referred to was established in 1887 under a special act of the legislature, locating it on the grounds of the State School Farm at Owatonna, and appropriating for its use a sum not to exceed \$1,000 per annum, its management being under the control of the Board of Regents, annual reports from the station to be made to the State Horticultural Society. The amount actually expended in operating the station is \$400 annually. It is at present under the superintendency of Mr. T. E. Cashman, the successor of Mr. E. H. S. Dartt, who founded the station and maintained it successfully until his death a few years since.

The writer visited this station some eight years ago, but the larger portion of the trees then were too young to have borne any fruit. It was then crowded with seedlings in great number. These have been culled out through the process of natural selection, which winter-killed some and permitted blight to take others, supplemented by the axe of the superintendent, until the number growing therein has been reduced to something like a thousand trees, most of which show extreme hardiness and are reported by the superin-

tendent to be practically free from blight. These trees are growing on a tract of five acres of land not especially well located as an orchard site, as it is somewhat lower than the land on several sides of it, apparently having been selected for the purpose on account of its sheltered location. The orchard has every appearance of being in all respects well cared for. It is well cultivated to stimulate growth and partly, perhaps, for the purpose of permitting such trees to blight as are inclined to, so as to get rid of them early. We found a large number of these trees in bearing, many, however, being early ripening varieties, from which the fruit had already been taken, assisted by the omnipresent small boy, who, it seems, is somewhat in evidence in this excellent town of Owatonna as well as elsewhere. Many of the trees, however, were carrying considerable fruit and often of large size and fine appearance. A few varieties just in season were tested by the committee and found good enough for their eating, and handsome enough to satisfy the demands of any market. The sorts, however, being sought for especially are late keeping varieties, and these were not at the time of our visit sufficiently advanced for examination. As many as possible of the late keeping ones will be shown at the next winter meeting of this society and passed on then, so no further reference to them is needed at this time.

Mr. Dartt laid the foundation of this station in the growing of seedlings himself and transplanting to the station every kind that could be reached that gave promise of value, also testing at the same time any named varieties of which there was any hope of usefulness in Minnesota. The results so far attained from this justify many times over the outlay and indicate the wisdom displayed in locating this station, which should certainly be continued in the very satisfactory work it is doing in aiding to solve the vital problems connected with the development of successful orcharding in the northwest.

Incidentally the committee saw much of the extensive greenhouses and nursery grounds of the Clinton Falls Nursery Co., of which Mr. Cashman, superintendent of the station, is president, and the ride about the adjacent country gave us some thought as to the orchard development of what long since became one of the horticultural centers of the state, very largely through the earlier efforts of Mr. Dartt, the first superintendent of the station.

WINTERING NURSERY STOCK DELIVERED IN THE FALL.

D. M. MITCHELL, OWATONNA.

I was asked by our secretary to prepare a paper on wintering nursery stock delivered in the fall, but I do not want it understood that I am advocating fall deliveries by complying with his request.

The instructions given in Green's "Amateur Fruit Growing" are good and if followed carefully will give good results. The book is easy to get and very instructive. By digging a hole in a well drained location so that when the trees are laid in the roots are about two feet and the tops a few inches underground, we have all the depth that is necessary. Many people are of the opinion that we want to dig deep and put on a covering to prevent hard freezing. This is a mistake. Before trees are put in the pit see that every bit of packing material is removed, then spread them out so that the earth can be packed securely around the roots, then moisten and fill with earth until the trees are covered—not necessarily all the roots; then lay on boards over the top lengthwise; after which fill the hole, covering tops, roots and all, mounding up to prevent water from standing.

When spring comes—and be sure and wait for real spring—dig down until you come to the boards, take them out, and you can then take your hands and take the trees out without injuring them in any way. If this method is followed, trees will come out in the spring in good condition. This applies to apple, plum and almost all nursery trees.

Gooseberries and currants can be planted in October very successfully; in fact I prefer it to spring planting. Some varieties of raspberries are often planted successfully in the fall by using plenty of covering.

We have had remarkable success in planting willow and Carolina poplar cuttings in the fall. These especially can be planted them profitably, as time is usually not as valuable as in the spring.

Rose bushes and flowering shrubs are often delivered in the fall and heeled in in the same manner in which trees are. We have had even better success in planting peonies in the fall. They are then ready to grow when vegetation starts, and we have had many fine blossoms from divided roots the following summer. If you

have purchased tulips or other fall bulbs they should be planted as soon as received, which should always be in the fall.

It is probably useless to say that strawberries and evergreens should never be delivered in the fall.

As soon as your stock arrives from the nursery, care for it at once. A great many trees will stand considerable abuse, but there is often too much delay in getting trees in the ground, both in fall and spring. They may grow, but it is reasonable to think that they often lose a great deal of vitality by poor handling. If a tree or shrub is worth a place in your orchard or on your lawn, it certainly pays to give it good care before planting as well as after.

The Chairman: I think we ought to applaud that paper. That is certainly a subject that we ought to discuss. The best method of delivering nursery stock in the autumn, and we can touch upon the stock that should be delivered in the autumn. That is a good subject to discuss.

Mr. C. C. Hunter: I would like to ask Mr. Mitchell whether he has had experience setting out trees in the fall?

Mr. Mitchell: I have seen apple trees planted in the fall, but I do not think it pays. I don't think it is the preferable time of planting. I think they should be planted in the spring.

The Chairman: Give us your views on the subject, Mr. Hunter.

Mr. Hunter: If a man puts in an order in the fall for planting in the spring, he is going to have a lot of extra work to keep them and then set them in the spring. It saves a great deal of extra work to plant them in the spring. I have sold trees, and I have recommended planting in the fall. A lot of the trees will die if they are not heeled in right. A great many farmers will simply dig any kind of a hole and heel them in, but they will not take the time to do it right. I have seen whole bundles of trees heeled in that stood up straight; that is not the way to heel them in. My advice is to buy the trees and set them out where they are to grow.

Mr. Geo. H. Whiting (S. D.): I want to say a word in regard to fall delivery. I don't believe there should be any fall delivery at all. I think we ought to discourage that idea entirely. It is to the interest of the nurseryman as well as the planter to have no fall delivery at all. I think the proper idea or the proper way to handle nursery stock is for the nurseryman to get his stock together in good season in the fall and put it in a good storage house and then be ready to deliver it in the spring at the time the planter wants it. I believe stored stock is better than stock left outside. I am satisfied upon that point. If you have the proper storage house your stock can be carried through in better shape than when planted or heeled in. There is not one farmer in ten scarcely that

will heel in his stock and do it right, or do it in such a way that it will come out in the spring the way it ought to come out. If we should entirely discourage fall delivery or if we should combine and agree not to make any fall deliveries, we would all be better off. The planter would get better stock, and he would receive it in better shape.

Mr. C. C. Hunter: If a man is determined to get his stock in the fall, he may plant it instead of heeling it in. I find there is better success than in heeling it in. I have watched both cases, and I would say plant it in the fall.

Mr. Whiting: I believe in that too, but if you do any fall planting it ought to be done early enough so the roots will become imbedded so they will start in the fall, otherwise you have got to go to work and cut back enormously, and if you do that it hampers you in both cases. It also divides up the nurserymen. It puts the nurserymen in a position where they cannot take care of their customers as they could if they did not make any fall deliveries. I do not think it is a good thing for all concerned. However, if it is to be done in the fall, the planting should be done early.

Mr. J. P. Andrews: We had a little experience in burying trees in the fall, and whenever they are put in correctly, the way Mr. Mitchell says, there is not much trouble, but from what other people say there is a great deal of loss, though it is generally because the trees have not been separated and the dirt put around the roots of the trees. I have planted them in the orchard and then right away after planting leaned them to the southwest. In planting I plant them deep and cover them with dirt the same as a grapevine. They spring a little in the root, and the dirt springs a little if they bend, and it is remarkable to see how easy it is to cover a tree that is an inch in diameter. In that way the tree is entirely out of reach of cold weather, and that tree will start up and grow almost twice as much as a tree will when planted after spring delivery. I can get almost twice the growth from a tree planted in that way that I can from a spring planted tree. At the same time I would not recommend that way of doing it to a farmer.

The Chairman: What would be your idea of the percentage of loss of autumn planted stock compared with spring planted stock?

Mr. Andrews: I do not see why there should be any loss in the autumn planted stock.

The Chairman: Or spring planted stock either? (Laughter.)

Mr. Andrews: I get a better growth from fall planted stock. I am not advocating that way because I do it. Others might not do it the way I do it, they might not cover it properly, although it takes but little dirt to protect a tree. One advantage is that it divides the work of the fall and spring, and in case where we know a man will give his trees proper care we can deliver him.

the trees in the fall, and in that way it divides the work instead of bringing it all together in the spring time.

Mr. E. A. Smith: Is there a hardy class of stock that cannot be safely planted in the fall? For instance, a nurseryman is shipping a hardy class of seedlings, and they arrive in splendid condition, is it not more satisfactory to plant them in the fall rather than heel them in and then take them out and plant them again in the spring? Would not the result be about as good as though they were planted in the spring?

Mr. A. Brackett: There are some winters we have in Minnesota that will almost kill a tree standing in the nursery row. If it is left standing there it will revive and grow, while if that tree is dug up and part of the roots cut off and then planted in the fall it will be a failure; and I do not believe there is a nurseryman in the house if he were going to plant an orchard for himself would prefer to have his trees dug in the fall and heeled in and covered over and expect them to start right ahead. If there is a nurseryman in the house that has had any experience of that sort I would like to hear from him.

Mr. Cole: I have had some experience in selling nursery stock and delivering it in the fall of the year, and there is very little that fails provided the customer is properly instructed regarding the heeling in of the stock. That is where the principal difficulty arises, the agent or nurseryman does not give the customer proper instruction regarding the heeling in of the stock. I give him a talk when selling the goods, and when delivering he gets instruction in his own language. I tell him and show him how it is done, and with my customers I have not seen many of them fail with this fall delivery. I do not think there is any question but that a man can deliver nursery stock in the fall if it is properly heeled in, but I do not believe in planting in the fall.

Mr. Older: I have had some experience in setting out trees in the fall, in certain seasons they came all right, and some seasons they killed back. I do not think it is so much in the care, it depends altogether on the season. As Mr. Andrews says, trees delivered in the fall, bent over and buried, each one by itself, is a very nice way to take care of nursery stock. There is considerable work connected with trees delivered in the fall and buried properly, but they are absolutely safe. If they are properly buried, there is no risk from mice, rabbits, freezing or anything else. In the spring of the year everybody cannot get them before they are started and put them in. The only advantage is that the farmer has them on hand and can put them in early, probably considerably earlier than if received in the regular spring delivery. In my experience with currants and gooseberries it is all right to set them out in the fall, early in the fall, but apple and plum trees and those things that are semi-hardy at the best, setting them out in the fall is altogether too risky on account of the climate.

Mr. Cole: There is another thing about this fall delivery we have to consider. If you wait to deliver all your nursery stock in the spring, the nurserymen will "bust" in the business. At least half of our customers in the country can raise but little money in the spring, but they have got it in the fall. (Laughter.)

Mr. M. R. Cashman: As I understand it, the efforts of this society are directed toward the encouragement of tree and fruit planting in the northwest, and there is no surer way of discouraging fruit growing than to tell a man to plant his apple and plum trees in the fall of the year. One thing I have found by actual experience, where we have successful orchards delivered in the fall the trees were properly heeled in. That means a number of things. It means that each tree should be separately covered with moist dirt and then soaked with water so they can be taken up in the spring in as good condition as they were put in in the fall. This can be done easier by the customer than it can be done in the nursery. I pack trees in a storage building and put them in in good shape, while with the same labor a farmer could heel a tree in on his own farm. When the time comes for planting in the spring he has his trees right on the ground and can plant them early and at the proper time. That is one point in favor of delivering trees in the fall. Where we ship from one place to another the climate is not always the same, and we do not get the same results. I find in delivering trees in the spring we are apt to have very hot, muggy weather, and if they are not very well packed the tree is liable to sprout in the box, which makes it practically worthless. Where you get your trees in the fall, bury them in the proper manner, if they are good when delivered and if properly planted in the spring, I venture to say that every one of them will grow.

THE ORCHARD OF SOUTHWESTERN MISSOURI.

A TALK.

Mr. Wyman Elliot: Two minutes is a mighty short time in which to cover a thousand miles of travel, but I want to say to you that our conditions are fully as good as they are down in Missouri, according to the observations I made on this trip. The trees are badly scabbed and look as though a fire had been through them; the foliage was burned yellow when ours was green, and I don't think it was from frost, but it was from too much wet. They have immensely large orchards down there, I will admit. They have from three to five hundred acres in one orchard; one orchard had 1,600 acres, and there was a peach orchard there of 3,000 acres and all of one variety, the Elberta. The best locations, where they raise the best fruit, is on those light limestone soils on their sidehills. They have the same experience we have here, on their low grounds the fruit is not nearly as good in quality as that grown on high

ground. I remember one orchard I was in, I think it was about as fine looking an orchard as I have ever seen in my life, peaches and apples, and it showed that the man had some intelligence in the care that he had given it.

Mr. Latham: Did you see any scab?

Mr. Elliot: We are not in it with scab. Their soil in many places is full of rock, and in one place particularly they told me they dug the holes with a pick and wheeled enough dirt in to plant the trees—but they were raising a fine quality of fruit. Speaking of what they have to do down there, Mr. Geo. T. Lincoln—I cannot name the town he is in—told me he marketed this year 1,800 barrels of fruit, the finest fruit that was grown in that section. It was right in that same neighborhood where those green sour oranges were. I did not know I was to talk here, or I would have brought some of the fruit with me that they raise down there. Now you may ask what did that man Lincoln do to get all that nice fruit? He used dust spray. He sprayed twice before the trees were in bloom. As soon as the blossoms had fallen he sprayed again and twice afterwards, making five times that he sprayed. I am satisfied with the dust spray, and I am going to use it next year. We can go where we will, and we find that every one has his troubles, and we have got to use pretty nearly the same intelligence to combat them. If we expect to succeed in this state we have got to use better methods. I want to say that the trip I made down there was a delightful one. I don't know when I took a trip that I enjoyed as much as I did that, and it was a perfect ovation from start to finish. We visited town after town where they were expecting us, and in three instances they had arranged a fruit and vegetable show to show us what they could do. They did not tell me the other side of the story, but they told me the best side always; they put the best foot foremost just the same as we do here.

Mr. Geo. J. Kellogg (Wis.): Do they spray while the trees are in bloom?

Mr. Elliot: No, just after.

Mr. O. F. Brand: They have those very heavy dews, that is the reason they are so successful with the dust spray.

Mr. Elliot: We have heavy dews here. The only difficulty with us is that we do not improve the opportunity. We usually have something else to do, but we could use dust spray just as well as not. We could put it on early in the morning or late in the evening.

Secretary's Corner.

A SEEDLING PEAR FROM MANKATO.—A very nice, sweet, pleasant flavored little pear was received in the office Sept. 15th, from Mr. J. M. Broome, of Mankato, which he says was grown from seed planted eight years ago. This is the first time the tree has borne, producing ten specimens. Mr. Broome, in his letter, states that the tree is acclimated. By this he evidently means that it has stood the winters. If further tests shows that the tree is adapted to our climate and does not winter-kill, it certainly will be a great acquisition.

A SEEDLING PLUM FROM CHAS. G. PATTEN.—A seedling plum came in by mail Sept. 14th, from Chas. G. Patten, of Iowa. The plum averages over one and one-half inches in size, of a rich red color, peels easily, has no astringency and is of a very good flavor. It answers, in many respects, the requirements of competition for the Loring prize. As to the hardiness and productiveness of the tree, we are not informed. Mr Patten has promised to send a history of the plum, which we hope to present later.

PROF. HANSEN IN RUSSIA —Prof. N. E. Hansen, the horticulturist at the South Dakota Experiment Station, is making his third trip to Europe to collect hardy fruits and incidentally anything else he may run across of value to this country. He will work principally in the Scandinavian Peninsula and northern Russia, though his field of investigation is not strictly confined to these countries. Prof. Hansen's two previous visits to Russia and Siberia for similar purpose will make it easier for him to accomplish what he is undertaking to do in this visit. We anticipate something of special value to Minnesota horticulture from it. It is likely that he will be at home again late this fall.

A NEW BULLETIN BY PROF. GREEN.—Another of Prof. Green's practical publications is being sent out by the State Experiment Station, Bulletin No. 96, entitled "Ornamental Trees, Shrubs and Herbaceous Plants in Minnesota." The title speaks so well for itself that it is hardly worth while to enlarge upon it. The bulletin contains a very full list of hardy and successful ornamental trees, shrubs and herbaceous plants, describing each one in its alphabetical order and giving directions for winter care where necessary. This is the result of his own experience in this climate. It is not copied from any other work or taken second hand anywhere, and the conclusions he arrives at and the advice he gives are to be relied on. Of course, the reader must consider any varying circumstances under which he may undertake to grow any of the articles referred to. The list is followed by a very practical article consisting of general rules for planting, locating and trimming a lawn, winter protection for perennials, etc. The bulletin concludes with a large number of illustrations of single plants and others showing arrangement on the lawn or about the various buildings. Every member of the Horticultural Society should secure a copy of this bulletin. It is well worth binding, and some arrangement may be made to secure a quantity in this form. Meantime address Prof. S. B. Green, at St. Anthony Park, for one. The supply of surplus copies is limited, the number not being equal to the membership of the society, we fear, so that early applications are most likely to secure one.

PREMIUMS ON FRUIT AT THE STATE FAIR.—On account of the pressure of work in the office of Sec'y. Randall, of the Minnesota State Fair, it has been found impracticable to get out the copy of the list of awards in the horticultural department at the late fair in time for publication in this number. The complete list is promised for the November number. In the meantime the premiums will all have been paid and an opportunity will occur to check up from the list in the November number.

FRUIT FOR THE WINTER MEETING.—Are you storing the usual amount of fruit for the exhibit we are so proud of at the annual meeting of the society? Especial effort will have to be made if the exhibit is kept up to its maximum this year, as so many of the exhibitors have less to show than usual. Please note again the premium list, as published in the September Horticulturist in the Secretary's Corner.

VIEW AT THE STATE FAIR.—Three unusually fine photographic views of different parts of the horticultural exhibit at the late state fair have come into the office from Mr. H. D. Ayres, the official photographer of the experiment station. They are much too good not to be used, and so while only one of the large ones will appear in this number, the other will soon be used, probably as frontispiece of a later issue of our monthly.

THE AMES PLUM.—A variety, of which a dozen specimens reached the office Sept. 19, from Mr. O. W. Moore, Spring Valley, Minn., which he calls the Ames plum, is found to be a very excellent fruit. The best specimens measure up to 1 7-16 inches in diameter, dark peach color, freestone, firm texture, sweet and good. If it is curculio proof—and Mr. Moore notes that while he has plenty of curculio at his place he has never found a plum of this variety stung by it—it is a fruit certainly of much merit.

HYBRID PLUM FROM GRAND MEADOW.—Mr. C. F. Greening, of Grand Meadow, sent to the office a number of specimens of a plum which he believes to be a cross between a native plum and a domestic variety that has been growing and fruiting on his place for a number of years. For a Minnesota plum it is of large size, being in the neighborhood of one and three-fourth inches in diameter, peels easily, firm flesh and a fair quality. If the tree proves to be hardy it is likely to be of value in this section. It is from Mr. Greening's place that we expect to secure a quantity of plum seed to be used in growing seedlings, as it is believed that many of these seeds will be crosses similar to that producing the fruit described above, and it is hoped that something good may come out of this experiment.

FRUIT FOR STORAGE—should be picked while yet firm, as fruit that has advanced to a stage of ripeness to be best for eating will almost invariably "break down," and even if it looks well when taken out will be decayed at the core. Some growers of high quality fruit pick their orchards more than once, gathering the fruit as soon as it is well colored, leaving the poorly colored and immature fruits until they have become well colored. Unless this is done some fruit will fail to grade number one for this cause, but each grower must decide whether or not such a course will pay.

JONATHAN FREEMAN,
Late of Austin, Minn
(See opposite page)

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In Memoriam

JONATHAN FREEMAN, AUSTIN, MINN.,

Died July 5, 1906, Aged 63 Years.

Jonathan Freeman was born in Woodstock, Ulster Co., N. Y., Oct. 9, 1843, and died in Grand Junction, Colorado, July 5, 1906, aged nearly sixty-three years.

Mr. Freeman left his home in Austin, Minn., June 6, 1906, intending to be absent from four to six weeks on a vacation for rest and sight seeing. For nearly four weeks he intensely enjoyed his trip among the Rocky Mountains, in Colorado. Most of this time he was with friends. On June 22d, he arrived at Grand Junction, Colo., intending to remain a few days, visiting the famous fruit orchards surrounding that city. On June 26th he was suddenly taken very ill with infectious erysipelas and acute Bright's disease. He was taken to the St. Mary's Hospital, and there he died July 5th, with no relative near him, attended only by his physician and nurse.

Mrs. Freeman and daughter Lena left Austin July 3rd, upon receipt of a telegram informing them of Mr. Freeman's serious illness, but they did not reach Grand Junction until twenty-six hours after his death. The funeral services were held in Austin, Minn., July 9, on Mr. Freeman's sixty-third birthday. The interment was made in Harlington Cemetery, Waverly, Iowa, on July 10th.

Mr. Freeman was one of seven children. All have passed away, except the youngest, Mrs. Sara F. Loomis, of Camillus, N. Y. A favorite nephew died in Chicago July 1st. Mr. Freeman leaves a wife and two children, Lena M. and Cecil L., who at present reside on the home farm near Austin, Minn. The eldest son, Irving H., died when three years old and is buried in Waverly, Iowa.

Mr. Freeman was a graduate of Munroe Collegiate Institute, N. Y., and afterwards a teacher of mathematics and rhetoric in the same institution. His whole life was the life of a student. He arose early, and by judicious planning of his daily work no day was so busy that he did not secure several hours for study. He was an omnivorous reader and kept himself thoroughly informed upon current events, history, scientific research, religious progress, modern methods of farming, etc. He never read fiction. Said he had no time for it. He never read secular reading upon the Sabbath. This day was devoted to the worship of God. He was a member of the Baptist church for forty-six years, being Sunday school superintendent and deacon for many years.

Mr. Freeman was a Christian gentleman and a philanthropist in the broad sense of the word. He followed the golden rule implicitly. He was never known to cheat a person in a business deal. His word was as good as his bond. The slightest deviation from truth and honesty was impossible to him. Even inaccuracy was considered by him almost a crime. His mind was very bright and active, his capacity for hard study upon the matter under consideration was wonderful, and had he possessed good physical health he would have been much more widely known among his fellows.

The remembrance of his merry smile and hearty laugh, his enjoyment of an apt repartee, his intense interest in every movement which might benefit his fellowmen, the cheery personal magnetism of his presence and musical voice, are an heritage worth more to his many friends than money or fame.

From 1860 to 1870 Mr. Freeman was engaged in teaching and clerical work in New York state and Connecticut, interspersed with work upon his father's farm among the Catskills. His health suffered from the confinement of in-door life, so in 1869 he and his wife removed to Iowa, settling upon a farm near Waverly. Here were spent thirteen very busy years. Mr. Freeman was intensely interested in the starting of an apple orchard upon his farm. He also devoted some ten acres to the raising of a grove of European larch and evergreens of many varieties. He was among the first to engage in the creamery business.

Durng this time he was either president or secretary of nearly every local farmers' organization in the county. For seven years he was secretary of the Farmers' Fire Ins. Company of Bremer Co., Iowa, at one time the largest cooperative insurance company in

the state. He was secretary of the Moscow Creamery Ass'n. of Freeborn Co., Minn., for four years. For several years he was secretary of the Southern Minn. Hort. Society, and also one of the vice-presidents of the Minnesota State Horticultural Society for two years. He was always interested in the purification of politics, in the education of the common people, in the elimination of the line between a privileged moneyed class and the common every-day workman.

During his life Mr. Freeman did a great amount of hard work for the benefit of his fellowmen, work which has brought him little recompense except in the love and respect of those whom he tried so hard to benefit. It was his nature to make hard work of everything which he undertook to do. No task was complete until every stone was upturned, every possible research made, every bit of available evidence sifted.

He was an enthusiast, and yet a thoroughly practical man.

Because of failing physical strength, the last few years have been quietly spent at his farm home near Austin, Minn., until a longing to "again see the mountains" lured him to his untimely death among strangers. The memory of his noble, unselfish life will long be an inspiration to the community in which he resided.

A personal acquaintance with the subject of this sketch extending over the period noted above, from the time Mr. Freeman became secretary of the Southern Minnesota Society up to the date of his death, gives me opportunity to confirm very much that is said about him here, and especially as to his zeal, integrity and ability to carry out successfully what he undertook. Mr. Freeman was a very efficient secretary for the Southern Minnesota Society and did a great deal to place that young organization on a substantial footing. In the course of the years that he occupied that position considerable correspondence passed between us. Later, he was elected and then re-elected to the office of vice-president of this society for his congressional district, and his reports were really a new departure in their character, as he took great pains to secure information from many members in his district, codifying the facts that he secured into a very interesting and practical report. His method of sending out a series of questions to be answered for the purpose of securing the information he desired to obtain is now being followed by all the vice-presidents of the society.

I had the pleasure of meeting with him at two or three sessions of the state society and of seeing him occasionally at other times. He impressed me as being a person of unusual sincerity, force and decision of character, and what seems like his untimely death comes to us who are more closely allied to the purposes of the organization as a distinct shock, the cutting off of one of the strong arms of the society upon whom we could lean with steady assurance that its strength was to be relied on. To those who were more often in contact with him than was my good fortune, the loss must be a proportionately severer one. He has left a record of which his friends may be justly proud. Secretary.

DISCUSSION ON NEW METHOD OF GRAFTING.

(Following illustrated article by Wyman Elliot on page 146, April No.)

Mr. Brackett: I would like to ask Mr. Elliot how long after he pinches out the top of the graft that has grown eight or ten inches, how long will it be before it will mature a bud and start to grow again?

Mr. Elliot: I have never run that down systematically, but it does not take a great while. Sometimes the bud will go right on growing. The difference is all in the different varieties.

Mr. Busse: I pinched some last summer, and within two weeks they sprouted from below.

Mr. A. B. Lyman: Where you had two scions and both grew, would you cut one out afterward or allow both to grow?

Mr. Elliot: It all depends upon what your union is. If you have a good strong union you will have no trouble. The trouble with the trees is in the crotches; a break occurs, they keep spreading apart, and after awhile the water gets in, and away goes your tree.

Mr. Underwood: What do you wax with?

Mr. Elliot: With common grafting wax. I went to the hardware store and got a pot that was manufactured for a glue pot. I put a little water in the outside vessel and the wax in the top vessel; then I put over it a six inch stovepipe and nick the ends and hang it so it will hold a lamp underneath, and that will keep the wind from blowing out the light—and on very windy days I sometimes have to carry a sack around with me and throw it around the bottom. Some of you people may have better arrangements.

The Chairman: Mr. Underwood has experience, we would like to hear from him on this subject.

Mr. J. M. Underwood: Practically what Mr. Elliot says in regard to waxing the top is the method we employ. We have a scheme now whereby we use a wood alcohol lamp for keeping the

wax warm, which is a very nice way and in every way satisfactory. My first work in grafting was in top-working trees under the direction of Dr. Jewell, and I feel as though I was a past master in top-working. I do not quite agree with some of the statements Mr. Elliot makes. For the last work we did I think we collected some three or four thousand dollars. We did the collecting after the work was done, and I must have had some success in making those grafts live. Of course, I never have tried this new method, but I can see some things that I think are open to criticism. It was my part when working on the grafting team to set the grafts. I do not know how many of you are familiar with the methods of a grafting crew, but some of you probably are. We worked scientifically and did our work well; it was satisfactory to our customers, and they were always pleased with just one exception—we did more thorough work than they expected us to do, and it consequently cost them more than they had anticipated paying, but it was along practical lines and gave satisfaction when we were through.

That is something I could not stand for, the ease with which the scion becomes tight. You could tie it, but it is not practicable.

The Chairman: If they are put in right, they will be in as tight as it is possible to get them. I never saw anything tighter. It ought to be driven in tight in the first place. Those that Mr. Coburn put in were driven in so tight he could not get them out.

Mr. Underwood: Supposing that is true, if that graft is put in right so it is solid, it must be a less rapid process and a more difficult process to handle the grafts, so it is not as easy to do as the other method, and I do not see any objections to the other plan. After following it for fourteen years as a business, as well as having done it frequently during the last thirty to forty years, I do not see any objection to the old method. As far as making this cut is concerned, I always use a circular knife so it makes a smooth cut. So far as the scions are concerned they are similar to the others, only they are regular wedge shape and a little larger on the outside than on the inside. We never had the difficulty that Mr. Elliot speaks of, of decaying wood in the top. You can't criticise the old method so far as I am concerned, because I know it is all right and will stand the test.

Mr. Pond: How do you make your cut, straight with the bark where you split?

Mr. Underwood: It takes the natural course of the wood. I have set hundreds and thousands of them.

Mr. Brackett: Have you ever had any experience in pinching out the top of the graft?

Mr. Underwood: I have never had any experience of that kind. I don't know what would be gained. I always put in two grafts on a limb of that size for this reason, it sets up a growth and starts to healing over and will heal over more quickly than one graft.

Mr. Pond: What kind of a tool do you use with which to split the graft?

Mr. Underwood: We use a circular knife. Have it made so the outside edges come over the split, the outside rather than the inside. On the knife there is a little wedge that is inserted to open up the split, which we pry open, and the graft is put in. I should think it would be too difficult to do the work that Mr. Elliot described. I am not saying this is not a splendid method of making a graft grow, but it is certainly not easier to do than by the old method.

Mr. Elliott: In case one of those grafts does not grow, how does it heal over on the other side?

Mr. Underwood: The process of healing goes on just the same, but it does not heal as rapidly.

Mr. Elliot: In this kind of work it heals over right away.

Mr. Underwood: If your scions are in proper condition and your work is done well there is no necessity for failure, but if you have got poor scions and your work is done poorly there might be less injury to that stub by doing the work in the new way, but after it is sawed off it does not amount to anything anyway. If your graft does not grow, the only thing you can do is to cut off the stub and graft it again.

That brings up another principle of top-working: it is, how to graft a tree. It is a science to saw a tree properly for grafting. We always aim to leave one-third of the wood on the tree and take off two-thirds where we want to graft a tree entirely and secure a good growth of the grafts. There are some limbs that we leave and others we take off entirely. That is our aim in top-grafting an orchard tree, that is, a tree we want to transform from a seedling to a better variety.

Mr. Tieglund: How soon do you take off the other limbs that are left?

Mr. Underwood: The next year. If you have good scions you will get almost a perfect top the first year, and you can use your judgment about cutting off all the limbs. If there is not plenty of top you can leave a few of the limbs, and then later you can take them off, but if there is a good top you can take them all off.

Mr. Taylor: Do you let both scions grow?

Mr. Underwood: I would let both grow until they have made a strong growth and the cut has healed over, and then later you can saw out one.

Mr. Taylor: You don't break it off?

Mr. Underwood: Saw it or cut it off, make a good cut.

Mr. Tieglund: At what season do you cut them off?

Mr. Underwood: From early spring to June. That feature is not so particular, it just depends upon the condition of the wound.

Mr. C. F. Gardner: The next season?

Mr. Underwood: Yes, the next season.

Mr. Elliot: There would be no objection to cutting it off earlier in the season?

Mr. Underwood: No, that would do no harm provided there is a good growth.

Mr. Sievert: What is the best time to do top-working?

Mr. Underwood: The best time is in the spring. We used to begin in March and continue until there were small apples on the trees.

Mr. O. W. Moore: If you were to change a tree over would you do it all at one time?

Mr. Underwood: Yes, all at one time.

Mr. Emil Sahler: I have hundreds of little sprouts from my plum trees, would it be advisable to graft plum trees the same as apple trees, the small trees?

Mr. Underwood: The small trees I would whip-graft.

Mr. Sahler: I don't know; I had a failure in whip-grafting, I don't know whether to try it again.

Mr. Underwood: Then you didn't do your work well. I whip graft thousands, and I calculate to make ninety, yes ninety-five per cent., grow.

Mr. Yahnke: If a tree is top-worked, a tree that is naturally given to blighting, if your work is done all at once would it not be apt to blight some?

Mr. Underwood: If a tree is apt to blight, I should think it would. In top-working some Hibernial we had some very serious results in the matter of blight. I find I get splendid results in a majority of cases. The Virginia is entirely different, and we have had no experience like that.

Mr. Yahnke: Could we not apply a remedy in this way? The Hibernial is a strong grower, and if it pushes the scions ahead too fast would it not be a good plan to root prune if you want to top-work?

Mr. Underwood: I think that would kill the tree right out.

Mr. Yahnke: Well, I know I had good results by doing that way.

Mr. Kellogg: Do you top-work the year you plant them?

Mr. Yahnke: The year after is better.

Mr. Underwood: This Hibernial had been planted from two to four years and was a handsome looking tree, and there was nothing the matter with it, but when it was top-worked it blighted badly.

Mr. Busse: I grafted some three years ago and they blighted badly. They were the Wealthy.

ORCHARD NOTES FROM DULUTH.

HENRY CLEVELAND.

(Extracts from a letter.)

"I can not say that any considerable quantity of apples are produced here, but I can say that scattered over the western end of St. Louis county there are probably 2,000 bearing apple trees, most of them introduced since I settled here, some five years past.

"The larger number are Duchess; next largest number, Wealthy; some Northwestern and Patten's Greenings, which are uncertain owing to late maturity; a few Okabenas, same trouble as the Patten's and Northwestern Greenings; also a scattering few of Borovinca, Tetofsky, Yellow Transparent and Good Peasant.

"The largest single planting—coming into bearing 1907—is by the Jean Duluth Stock Farm Co., ten miles from the Spalding House, who have about 200 trees, fifty Duchess, balance divided between Wealthy, Borovinca and Yellow Transparent.

"Mr. R. M. Hunter has about seventy-five trees in bearing, second and third time, averaging about one-half bushel to tree now.

"Mr. H. W. Coffin has about fifty trees, coming into bearing 1907 and 1908, Duchess.

"Mr. John W. Morton has nine trees, third bearing year—one-half Duchess, one-half Wealthy, averaging about one bushel to tree.

"And there are many who have two, three or six trees, mostly Duchess, as it is very necessary to have or plant early maturing varieties on account of our regular early October killing frost. The Duchess ripen here Sept. 20 to 30, and are firm, well developed apples, finely colored and especially well flavored for the variety. Borovinca, Tetofsky, Good Peasant, Yellow Transparent, all mature here about that time. The Duchess has the call on account of hardiness, prolific bearing and being here an all around good tree.

"The early crabs, like Whitney, Grant, Martha and Early Strawberry, do finely and bear annually and heavily; the later maturing varieties often get caught by the early October frost.

"I am preaching in and out of season, 'plant fruit trees.' I even memorialized the park board to plant the street and avenue borders with apple trees. Thousands would come hundreds of miles to see our hillside twenty-five miles of apple bloom about June 1st each year. However they considered it a sort of joke,

but I assure you I was in earnest. I often present a pair of apple trees to tenants who promise to plant and care for them, even if they do rent the premises—in time the trees will benefit some one."

PROFITS IN GROWING APPLES.

E. A. SMITH, LAKE CITY.

The following illustrations of the profit to be derived from an orchard may be of interest. About ten years ago The Jewell Nursery Company, of Lake City, Minn., set out an orchard on what might be called waste land, the same being located on a bluff, or side-hill, too steep for cultivation and not valuable even for pasturage. The orchard contains about nine acres. The trees in this orchard have been in bearing for several years. The company, having sold the farm on which this orchard was located, their financial interest ceased until this year, when the owner of the orchard, being sick, could not look after the gathering of the fruit, and the Jewell Company took charge of it.

Sketch of Jewell bluff orchard containing nearly three thousand trees, most of which will come into bearing this year. The ground upon which these trees are planted is much steeper than the picture would indicate. It is almost impossible to drive a team in any direction thru this orchard.

They gathered 173 barrels of fruit. This fruit was sold for \$389.55 after deducting freight and commission.

This orchard is located about five miles from the railway. Counting the hours on the road and the time required in picking the fruit, the cost was \$103.61. 173 barrels at 30c a barrel makes \$51.90. Total expenses, \$155.51. Deduct this from the total net receipts \$389.55, and we find a net profit of \$234.04, or a prof-

it of \$26.00 per acre. This does not include the interest and taxes, we not knowing the amount of the same, but making a liberal allowance for these, there would then be a net profit of \$25.00 per acre.

If this orchard had received proper care, the profit could no doubt have been very materially increased. The orchard has practically taken care of itself. It has grown up to grass and in some places to underbrush. What is the most profitable feature on the farm per acre receives the greatest neglect. The land on which this orchard is located is not worth \$5.00 an acre, and yet it would pay an income of more than 20 per cent even if the land were valued at \$100.00 per acre.

I noticed in a recent paper that Mr. Wedge, our president,

Sketch of an orchard containing nearly two thousand trees upon the grounds of the Jewell Nursery Co.

marketed apples from his orchard, and they netted him a profit of more than \$33.00 per acre the last year. The trees in this orchard were planted a much greater distance apart than is really necessary, on account of using the ground for other crops. If

this orchard were filled up as it ~~should~~ be, there would probably have been a profit of \$45.00 per acre. These figures are worth considering, especially by those who do not believe that fruit can be grown with profit in the northwest.

The Jewell Nursery Company raised 3,500 bushels of apples, the same being sold at an average of 75c per bushel. The trees were grown on about twenty acres of ground, six acres of the ground being sand and gravel. Some 500 Okabena trees were on land of this character. This would mean gross receipts of \$130.00 per acre.

Dell Howard, of Hammond, Minn., has some twenty acres in orchard, ten acres of which are in bearing. In the year 1904 there was a large yield, but prices were low, yet his profit on these ten acres was \$1,500. In the season of 1905, the crop was smaller, but prices were higher, the total receipts being \$2,000, and the net profit \$1,500.

John Glover, of Galesville, Wis., has seventeen acres in apples, many of the trees being planted on bluff land. As given by Mr. Frank Yahnke, of Winona, the net profit in 1905 was \$2,800.

It is frequently stated that there will be an over-production of apples in the northwest at the rate tree planting is carried on. That day is far distant, however, as the demand is constantly increasing, and the manner in which surplus apples may be taken care of in case of overproduction has not even been attempted in the northwest, such as canning, evaporating and drying. Mr. Hughes, who has canning stations for vegetables at Cannon Falls, Le Sueur, BellePlaine and Ortonville, states that there is not a point in the northwest that is growing sufficient apples to warrant the placing of a canning factory there for canning apples, as there should be from fifteen to twenty thousand bushels of fruit that could be used for this purpose alone. He estimates that an average price could be paid for such fruit—good quality—of 50c per bushel, and for the poorer class of fruit, such as windfalls, 25c per bushel and up, according to quality. Apples could be brought to such factories in wagon loads, and one could afford to sell them at a lower price than where they are carefully picked and shipped to commission merchants. We mention these points for the benefit of those who are interested in growing apples as well as to remove the doubt of those who fear over-production.

In the November issue of "American Fruits," a report from

Nova Scotia makes mention as to what apple orchards have done for that country. I quote as follows: "It has changed the valuation of many acres from ten to one thousand dollars; it has changed the value of hundreds of acres of farms from two to ten thousand dollars. The apple industry has advertised the country more than any other of its products." What is true of Nova Scotia may be largely true of Minnesota.

BEST NORTHERN PLUMS.

CHAS. F. GARDNER, OSAGE, IOWA.

(Read before So. Minn. Hort. Society.)

In telling you what varieties to plant, of course I must confine myself to naming only those kinds that are procurable in our market. After I do this, I will speak a few words regarding the new varieties that may be introduced in due course of time.

I will name the Wyant, Surprise, Hawkeye, Rockford, De Soto, Miner, Rollingsstone, Forest Garden and Wolf.

Plant so as to give plenty of air and sunshine, say about fifteen by twenty feet, and keep the orchard absolutely free from grass and weeds by very shallow cultivation. If you want a winter mulch, sow buckwheat when you are ready to stop cultivating. If the trees are in bearing, sow as soon as plums are harvested. If not bearing, sow the last of July or first of August. Do not let them grow too high headed, keep the tops pinched back and thin out unnecessary twigs. Try to do your trimming in such a way that you will never have large limbs to cut off. Remove them while they are buds or twigs. Much of this bud and twig pruning can be done at any time of year. Remove them as soon as you see them. When you cut large limbs from a plum tree you do so at the imminent risk of destroying the future usefulness of that tree.

Many people set out plum trees and let them grow without any pruning for several years, and then the pruning mania suddenly seizes them, and they go at them with saw and ax, murdering them from right to left.

If one cannot understand the philosophy of doing nearly all the trimming by removing buds and twigs, then for goodness sake let them alone and let them grow as they have a mind to, except always removing dead limbs whenever you see them.

When you top-work a plum tree with some new, choice variety and the scion has grown from twelve to fourteen inches, nip

off the end of the shoot. If you do not do this the chances are that when the growth is twenty or thirty inches in length it will be torn off when the first violent thunder storm comes along, by splitting down, as we call it. If nipped back as I have directed, it is safe from injury in any ordinary storm.

Look over all top-worked trees six or eight times during the season, removing all buds as fast as they form anywhere on the stock. This kind of pruning is mostly done with the thumb or forefinger or both, always keeping an eye on the new growth of the scion, and when there is danger of its getting top-heavy pinching it back.

In regard to the new varieties of plums that will in a few years supersede the most of the kinds now grown, they are for the most part composed of a union of some of the varieties named in this paper with European or Japan plums by cross fertilization. The pits from this fruit are planted and grown, the best varieties selected and crossed again, and so on without end. We have had fine success in this line of work, and we invite all our friends who are interested in such matters to visit our grounds when plums are ripe and compare the new with the old kinds. Mr. Patten, of Charles City, has five varieties of his own production that are pronounced by plum experts as very valuable, and there is no doubt they will be heard from in the future. New and valuable varieties are appearing, not only in Iowa, in many localities, but in Minnesota, and Wisconsin, not to be outdone, can show its share of new and valuable seedlings.

None of these new and valuable plum trees that I am writing about can now be purchased, as there has been no time to propagate stock for the general market. The best trees that I know anything about bore their first crop the past season, therefore, it is best for the people to not get excited about this matter and give orders for new kinds of plums to strangers of whom they know nothing. Wait a few years and then buy some of parties whom you know to be reliable. Use good judgment in this matter, the same as you would in buying seed corn to produce the best results.

PREMIUMS AWARDED ON FRUITS AND FLOWERS AT MINNESOTA STATE FAIR, 1906.

APPLES.

(Open to all.)

Sweepstakes Collection.

(\$60.00 to be divided pro rata.)

Frank Yahnke, Winona	\$13.37
R. C. Keel, Rochester	11.95
J. A. Howard, Hammond	11.01
C. C. Hunter, Minneapolis	9.48
A. M. Mitchell, Hammond	8.68
Maron De Witt, Hammond	5.51

Peck of Wealthy Apples. (\$20.00 to be divided pro rata.)

J. A. Howard, Hammond	\$2.25
C. E. Older, Luverne	1.80
Clarence Wedge, Albert Lea	1.80
John Bisbee, Madelia	1.79
W. E. Oliver, Worthington	1.58
F. I. Harris, La Crescent	1.62
Frank J. Butterfield, Long Lake	1.62
Wilcox & Co., White Bear Lake	1.57
Thos. Redpath, Wayzata	1.57
Maron De Witt, Hammond	1.47
W. L. Parker, Farmington	1.47
P. H. Perry, Excelsior	1.46

Collection of 10 Varieties of Apples. (\$30.00 to be divided pro rata.)

F. I. Harris, La Crescent	\$3.19
Frank Yahnke, Winona	3.18
J. A. Howard, Hammond	3.18
C. E. Older, Luverne	2.87
Clarence Wedge, Albert Lea	2.87
P. H. Perry, Excelsior	2.55
W. E. McNelly, Caledonia	2.55
John Bisbee, Madelia	2.55
A. B. Lyman, Excelsior	2.39
Nils Anderson, Lake City	2.38
Geo. W. Strand, Taylors Falls	2.29

APPLES.

(For Professionals.)

Collection. Hybrids and crabs excepted, not to exceed fifty varieties nor less than thirty varieties. (To be divided pro rata, \$75.00.)

J. A. Howard, Hammond	\$19.40
Clarence Wedge, Albert Lea	15.60
W. L. Parker, Farmington	17.60
Frank Yahnke, Winona	14.60
C. E. Older, Luverne	7.80

1st	2nd	3rd
Prem.	Prem.	Prem.

With an addition of \$10.00 for the first premium and \$5.00 for the second premium.

J. A. Howard, Hammond	\$10.00		
W. L. Parker, Farmington		\$5.00	

SINGLE PLATES.

Anisim—			
E. G. Evestred, Sacred Heart	\$1.00		
J. A. Howard, Hammond		\$.75	
F. I. Harris, La Crescent			\$.50
Anis—			
Clarence Wedge, Albert Lea	1.00		
Antonovka—			
A. B. Lyman, Excelsior	1.00		
Thomas Redpath, Wayzata .....		.75	
F. I. Harris, La Crescent .....			.50
Ben Davis—			
Clarence Wedge, Albert Lea	1.00		
Frank Yahnke, Winona .....		.75	
P. H. Perry, Excelsior .....			.50
Brett—			
P. H. Perry, Excelsior	1.00		
Clarence Wedge, Albert Lea .....		.75	
W. L. Parker, Farmington .....			.50
Borovinca—			
Gust Johnson, Excelsior	1.00		
W. L. Parker, Farmington .....		.75	
P. H. Perry, Excelsior .....			.50

PREMIUMS AWARDED AT STATE FAIR.

415

Cross—			
W. L. Parker, Farmington.....	1.00		
Clarence Wedge, Albert Lea .....		.75	
Christmas—			
A. B. Lyman, Excelsior	1.00		
Clarence Wedge, Albert Lea.....		.75	
Charlamoff—			
W. L. Parker, Farmington.....	1.00		
Gust Johnson, Excelsior.....		.75	
P. H. Perry, Excelsior.....			.50
Fameuse—			
Clarence Wedge, Albert Lea	1.00		
F. I. Harris, La Crescent .....		.75	
W. E. McNelly, Caledonia .....			.50
Forsberg—			
J. A. Howard, Hammond.....	1.00		
F. I. Harris, La Crescent.....		.75	
Gideon—			
F. I. Harris, La Crescent.....	1.00		
P. H. Perry, Excelsior .....		.75	
W. L. Parker, Farmington.....			.50
Giant Swaar—			
F. I. Harris, La Crescent.....	1.00		
J. A. Howard, Hammond .....		.75	
Gilbert—			
J. A. Howard, Hammond.....	1.00		
W. E. McNelly, Caledonia .....		.75	
F. I. Harris, La Crescent .....			.50
Golden Russet—			
Frank Yahnke, Winona	1.00		
J. A. Howard, Hammond .....		.75	
Clarence Wedge, Albert Lea .....			.50
Grundy—			
J. A. Howard, Hammond	1.00		
F. I. Harris, La Crescent .....		.75	
Haas—			
W. E. McNelly, Caledonia	1.00		
G. A. Anderson, Renville .....		.75	
J. A. Howard, Hammond .....			.50
Hutchins—			
J. A. Howard, Hammond	1.00		
Jewell's Winter—			
Thomas Redpath, Wayzata	1.00		
J. A. Howard, Hammond .....		.75	
Lord's L.—			
Frank Yahnke, Winona	1.00		
J. A. Howard, Hammond .....		.75	
F. I. Harris, La Crescent .....			.50
Lowland Raspberry—			
A. B. Lyman, Excelsior	1.00		
Longfield—			
F. I. Harris, La Crescent	1.00		
Thomas Redpath, Wayzata .....		.75	
P. H. Perry, Excelsior .....			.50
Malinda—			
Clarence Wedge, Albert Lea	1.00		
W. L. Parker, Farmington .....		.75	
J. A. Howard, Hammond .....			.50
Newell's—			
W. L. Parker, Farmington	1.00		
J. A. Howard, Hammond .....		.75	
Peter—			
Thomas Redpath, Wayzata	1.00		
J. A. Howard, Hammond .....		.75	
C. E. Older, Luverne .....			.50
Peerless—			
W. E. McNelly, Caledonia	1.00		
Gust Johnson, Excelsior .....		.75	
J. A. Howard, Hammond .....			.50
Peach—			
W. L. Parker, Farmington	1.00		
Plumb's Cider—			
Frank Yahnke, Winona	1.00		
W. L. Parker, Farmington .....		.75	
Rollin's Prolific—			
J. A. Howard, Hammond	1.00		
F. I. Harris, La Crescent .....		.75	
Repka Malenka—			
Gust Johnson, Excelsior	1.00		
Thomas Redpath, Wayzata .....		.75	
W. L. Parker, Farmington .....			.50

St. Lawrence—							
Frank Yahnke, Winona	1.00						
W. L. Parker, Farmington .....						.75	
J. A. Howard, Hammond .....							.50
Scott's Winter—							
F. I. Harris, La Crescent	1.00						
J. A. Howard, Hammond .....						.75	
W. L. Parker, Farmington .....							.50
Sugar Loaf—							
Frank Yahnke, Winona	1.00						
J. A. Howard, Hammond .....						.75	
Tetofsky—							
W. L. Parker, Farmington	1.00						
Frank Yahnke, Winona .....						.75	
J. A. Howard, Hammond .....							.50
Utter—							
J. A. Howard, Hammond	1.00						
A. B. Lyman, Excelsior .....						.75	
F. I. Harris, La Crescent .....							.50
University—							
Clarence Wedge, Albert Lea	1.00						
Frank Yahnke, Winona .....						.75	
P. H. Perry, Excelsior .....							.50
White Pigeon—							
Frank Yahnke, Winona	1.00						
J. A. Howard, Hammond .....						.75	
Walbridge—							
Frank Yahnke, Winona	1.00						
J. A. Howard, Hammond .....						.75	
G. A. Anderson, Renville .....							.50
Yahnke—							
Frank Yahnke, Winona	1.00						
J. A. Howard, Hammond .....						.75	
Yellow Sweet—							
Frank Yahnke, Winona	1.00						
Yellow Transparent—							
A. B. Lyman, Excelsior	1.00						
P. H. Perry, Excelsior .....						.75	
Frank Yahnke, Winona .....							.50
	1st	2nd	3rd	4th	5th	6th	7th
	Prem.	Prem.	Prem.	Prem.	Prem.	Prem.	Prem.
Duchess—							
W. E. McNelly.....	\$2.00						
Frank Yahnke		\$1.75					
P. H. Perry			\$1.50				
G. A. Anderson.....				\$1.25			
W. L. Parker.....					\$1.00		
J. W. Beckman						\$.75	
Fred Mohl							\$.50
Hibernal—							
J. A. Howard	2.00						
Clarence Wedge		1.75					
C. E. Older.....			1.50				
G. A. Anderson				1.25			
Fred Mohl					1.00		
Gust Johnson .....						.75	
A. B. Lyman .....							.50
McMahon—							
J. A. Howard	2.00						
Thomas Redpath		1.75					
F. I. Harris			1.50				
Gust Johnson				1.25			
Clarence Wedge.....					1.00		
Frank Yahnke .....						.75	
W. L. Parker.....							.50
Northwestern Greening—							
F. I. Harris	2.00						
J. A. Howard		1.75					
P. H. Perry			1.50				
Clarence Wedge				1.25			
Frank Yahnke					1.00		
W. L. Parker .....						.75	
Okabena—							
A. Brackett	2.00						
F. I. Harris		1.75					
P. H. Perry			1.50				
Clarence Wedge				1.25			
C. E. Older					1.00		
Frank Yahnke75	
W. L. Parker50

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SAM'L B. GREEN, Judge.

(For Amateurs.)

1st	2nd	3rd
Prem.	Prem.	Prem.

SINGLE PLATES.

SINGLE ENTRIES.			
Anis—			
Frank J. Butterfield, Long Lake	\$1.00		
R. C. Keel, Rochester .....		.75	
A. M. Mitchell, Hammond			\$.50
Anisim—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond .....		.75	
H. W. Shuman, Excelsior .....			.50
Antonovka—			
Frank J. Butterfield, Long Lake	1.00		
Ben Davis—			
W. J. Tingley, Withrow	1.00		
Hamlin V. Poore, Bird Island .....			.50
Brett—			
W. J. Tingley, Withrow	1.00		
R. C. Keel, Rochester .....		.75	
Joseph Wood, Windom .....			.50
Borovinca—			
S. R. Spates, Wayzata	1.00		
Frank J. Butterfield, Long Lake .....		.75	
Cross—			
F. F. Farrar, White Bear Lake	1.00		
Joseph Wood, Windom .....		.75	
Charlamoff—			
H. W. Shuman, Excelsior	1.00		
John R. Cummins, Eden Prairie .....		.75	
Maron De Witt, Hammond .....			.50
Fameuse—			
Nils Anderson, Lake City	1.00		
Forsberg—			
H. W. Shuman, Excelsior	1.00		
A. M. Mitchell, Hammond .....		.75	
Maron De Witt, Hammond .....			.50
Giant Swaar—			
R. C. Keel, Rochester	1.00		
A. M. Mitchell, Hammond .....		.75	
Maron De Witt, Hammond .....			.50
Gilbert—			
F. F. Farrar, White Bear Lake	1.00		
A. M. Mitchell, Hammond .....		.75	
Maron De Witt, Hammond .....			.50

Golden Russet—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond		.75	
R. C. Keel, Rochester			.50
Grundy—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond		.75	
Haas—			
Maron De Witt, Hammond	1.00		
A. M. Mitchell, Hammond		.75	
Hutchins—			
H. W. Shuman, Excelsior	1.00		
A. M. Mitchell, Hammond		.75	
Iowa Beauty—			
Mrs. Isabella Barton, Excelsior	1.00		
A. M. Mitchell, Hammond		.75	
Maron De Witt, Hammond			.50
Jewell's Winter—			
Nils Anderson, Lake City	1.00		
A. M. Mitchell, Hammond		.75	
Judson—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond		.75	
Lord's L.—			
H. C. Cornwell, Minnesota City	1.00		
Lowland Raspberry—			
R. C. Keel, Rochester	1.00		
Longfield—			
Maron De Witt, Hammond	1.00		
H. W. Shuman, Excelsior		.75	
A. M. Mitchell, Hammond			.50
Malinda—			
R. C. Keel, Rochester	1.00		
John Bisbee, Madelia		.75	
A. M. Mitchell, Hammond			.50
Newell's—			
John Bisbee, Madelia	1.00		
A. M. Mitchell, Hammond		.75	
Maron De Witt, Hammond			.50
Peter—			
S. R. Spates, Wayzata	1.00		
H. W. Shuman, Excelsior		.75	
A. M. Mitchell, Hammond			.50
Peach—			
R. C. Keel, Rochester	1.00		
Peerless—			
H. W. Shuman, Excelsior	1.00		
S. R. Spates, Wayzata		.75	
A. M. Mitchell, Hammond			.50
Plumb's Cider—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond		.75	
Rollin's Prolific—			
Maron De Witt, Hammond	1.00		
R. C. Keel, Rochester		.75	
A. M. Mitchell, Hammond			.50
Scott's Winter—			
Nils Anderson, Lake City	1.00		
Mrs. Isabella Barton, Excelsior		.75	
Maron De Witt, Hammond			.50
St. Lawrence—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond		.75	
Sugar Loaf—			
H. C. Cornwell, Minnesota City	1.00		
Tetofsky—			
A. M. Mitchell, Hammond	1.00		
Nils Anderson, Lake City		.75	
Maron De Witt, Hammond			.50
Utter—			
Nils Anderson, Lake City	1.00		
Maron De Witt, Hammond		.75	
A. M. Mitchell, Hammond			.50
University—			
H. W. Shuman, Excelsior	1.00		
W. J. Tingley, Withrow		.75	
Anton Wilwerding, Freeport			.50
White Pigeon—			
A. M. Mitchell, Hammond	1.00		
Maron De Witt, Hammond		.75	
R. C. Keel, Rochester			.50

PREMIUMS AWARDED AT STATE FAIR.

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Walbridge—							
Nils Anderson, Lake City	1.00						
Maron De Witt, Hammond75		
A. M. Mitchell, Hammond50
Yahnke—							
W. L. Parker, Farmington	1.00						
Yellow Sweet—							
W. J. Tingley, Withrow	1.00						
Yellow Transparent—							
E. A. Farmer, Minneapolis	1.00						
Anton Wilwerding, Freeport .....					.75		
R. C. Keel, Rochester .....							.50
	1st	2nd	3rd	4th	5th	6th	7th
	Prem.	Prem.	Prem.	Prem.	Prem.	Prem.	Prem.
Duchess—							
S. R. Spates	\$2.00						
H. Springer		\$1.75					
R. C. Keel			\$1.50				
Frank J. Butterfield..				\$1.25			
John Bisbee					\$1.00		
Maron De Witt.....						\$.75	
August Giesmann							\$.50
Hibernal—							
A. M. Mitchell.....	2.00						
F. F. Farrar		1.75					
Maron De Witt			1.50				
W. J. Tingley				1.25			
Nils Anderson					1.00		
S. R. Spates .....						.75	
J. O. Weld .....							.50
McMahon—							
Maron De Witt	2.00						
R. C. Keel		1.75					
A. M. Mitchell.....			1.50				
Northwestern Greening—							
Maron De Witt	2.00						
A. M. Mitchell		1.75					
Nils Anderson.....			1.50				
John Bisbee				1.25			
Anton Wilwerding....					1.00		
R. C. Keel .....						.75	
Okabena—							
A. M. Mitchell	2.00						
H. W. Shuman		1.75					
Nils Anderson			1.50				
J. O. Weld				1.25			
Maron De Witt					1.00		
Wilcox & Co.....						.75	
S. R. Spates .....							.50
Patten's Greening—							
Maron De Witt.....	2.00						
H. W. Shuman		1.75					
S. R. Spates			1.50				
A. M. Mitchell				1.25			
Alfred Albee					1.00		
John Gantzer .....						.75	
John Bisbee .....							.50
Wealthy—							
Maron De Witt	2.00						
H. W. Shuman		1.75					
S. R. Spates			1.50				
A. M. Mitchell				1.25			
R. C. Keel					1.00		
Rudolph G. Fischer..						.75	
Wolf River—							
R. C. Keel	2.00						
Maron De Witt		1.75					
A. M. Mitchell			1.50				
John Bisbee				1.25			
Anton Wilwerding ...					1.00		
John Gantzer .....						.75	

J. A. HOWARD,
W. L. PARKER, Judges.

CRABS AND HYBRIDS.

(Open to all.)

Collection, not to exceed ten nor less than six varieties (\$30.00 to be divided pro rata).

Maron De Witt, Hammond	\$3.08
W. L. Parker, Farmington	2.98
P. H. Perry, Excelsior	2.94
Anton Wilwerding, Freeport	2.80

S. R. Spates, Wayzata	2.80
Frank Yahnke, Winona	2.76
G. A. Anderson, Renville	2.65
C. E. Older, Luverne	2.49
R. C. Keel, Rochester	2.45
J. A. Howard, Hammond	2.35
Hamlin V. Poore, Bird Island	2.21

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.
Dartt—			
H. W. Shuman, Excelsior	1.00		
J. A. Howard, Hammond .....		.75	
A. M. Mitchell, Hammond .....			.50
Early Strawberry—			
W. E. McNelly, Caledonia	1.00		
G. A. Anderson, Renville .....		.75	
W. L. Parker, Farmington .....			.50
Florence—			
Frank Yahnke, Winona	1.00		
W. L. Parker, Farmington .....		.75	
J. W. Beckman, Cokato .....			.50
Gideons No. 6—			
Frank Yahnke, Winona	1.00		
R. C. Keel, Rochester .....		.75	
W. J. Tingley, Withrow .....			.50
General Grant—			
G. A. Anderson, Renville	1.00		
R. C. Keel, Rochester .....		.75	
J. A. Howard, Hammond .....			.50
Hyslop—			
Rudolph G. Fischer, Merriam Park	1.00		
J. A. Howard, Hammond .....		.75	
R. C. Keel, Rochester .....			.50
Lyman's Prolific—			
H. W. Shuman, Excelsior	1.00		
S. R. Spates, Wayzata .....		.75	
J. A. Howard, Hammond .....			.50
Martha—			
J. A. Howard, Hammond	1.00		
W. L. Parker, Farmington .....		.75	
R. C. Keel, Rochester .....			.50
Minnesota—			
G. A. Anderson, Renville	1.00		
Clarence Wedge, Albert Lea .....		.75	
W. L. Parker, Farmington .....			.50
Montreal Beauty—			
J. A. Howard, Hammond	1.00		
Maron De Witt, Hammond .....		.75	
A. M. Mitchell, Hammond .....			.50
Meador's Winter—			
J. A. Howard, Hammond	1.00		
Maron De Witt, Hammond .....		.75	
W. L. Parker, Farmington .....			.50
Orange—			
W. L. Parker, Farmington	1.00		
J. A. Howard, Hammond .....		.75	
A. M. Mitchell, Hammond .....			.50
Pickett's—			
J. A. Howard, Hammond	1.00		
A. M. Mitchell, Hammond .....		.75	
Maron De Witt, Hammond .....			.50
Pride of Minneapolis—			
Thomas Redpath, Wayzata	1.00		
Rudolph G. Fischer, Merriam Park .....		.75	
S. R. Spates, Wayzata .....			.50
Shields—			
J. A. Howard, Hammond	1.00		
Sweet Russett—			
F. I. Harris, La Crescent	1.00		
R. C. Keel, Rochester .....		.75	
Frank Yahnke, Winona .....			.50
Tonka—			
S. R. Spates, Wayzata	1.00		
F. I. Harris, La Crescent .....		.75	
Transcendent—			
H. Springer, Minneapolis	1.00		
Thomas Redpath, Wayzata .....		.75	
W. E. McNelly, Caledonia .....			.50
Virginia—			
J. A. Howard, Hammond	1.00		
Frank J. Butterfield, Long Lake75	
S. R. Spates, Wayzata50

PREMIUMS AWARDED AT STATE FAIR.

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Whitney—			
F. I. Harris, La Crescent	1.00		
C. E. Older, Luverne75	
S. R. Spates, Wayzata50

SEEDLING APPLES.

(Open to all.)

Collection, excluding Crabs (\$50.00 to be divided pro rata).	
T. E. Perkins, Red Wing	\$23.00
A. B. Lyman, Excelsior	16.00
Frank Yahnke, Winona	11.00
Collection of Crabs and Hybrids (\$15.00 to be divided pro rata).	
Frank Yahnke, Winona	\$15.00

SINGLE PLATES.

	1st Prem.	2nd Prem.	3d Prem.	4th Prem.
Summer Variety, kept in cold storage.				
T. E. Perkins, Red Wing	\$6.00			
G. A. Anderson, Renville		\$4.00		
Thomas Redpath, Wayzata			\$2.00	
Frank Yahnke, Winona				\$1.00
Fall Variety, not sweet, never having received a premium at the Minnesota State Fair—				
Thomas Redpath, Wayzata	6.00			
A. B. Lyman, Excelsior		4.00		
T. E. Perkins, Red Wing			2.00	
Clarence Wedge, Albert Lea				1.00
Fall Variety, not sweet, open to all.				
Clarence Wedge, Albert Lea	6.00			
T. E. Perkins, Red Wing		4.00		
Thomas Redpath, Wayzata			2.00	
A. B. Lyman, Excelsior				1.00
Winter Variety (not sweet), never having received a premium at the Minnesota State Fair—				
Thomas Redpath, Wayzata	10.00			
Frank Yahnke, Winona		8.00		
T. E. Perkins, Red Wing			4.00	
G. A. Anderson, Renville				2.00
Winter Variety (not sweet), open to all—				
Nils Anderson, Lake City	10.00			
A. B. Lyman, Excelsior		8.00		
T. E. Perkins, Red Wing			4.00	
A. B. Lyman, Excelsior				2.00
Sweet Variety, never having received a premium at the Minnesota State Fair, of such excellent quality as to make it worthy of cultivation; either fall or winter—				
Clarence Wedge, Albert Lea	6.00			
Frank Yahnke, Winona		4.00		
A. B. Lyman, Excelsior			2.00	

SAM'L B. GREEN, Judge.

PLUMS.

Sweepstakes collection. (\$30.00 to be divided pro rata).	
Dewain Cook, Jeffers	\$5.40
J. A. Howard, Hammond	5.27
Joseph Wood, Windom	5.27
P. H. Perry, Excelsior	5.20
Frank Yahnke, Winona	4.50
C. E. Older, Luverne	4.36
Collection, not to exceed fifteen named varieties. (\$25.00 to be divided pro rata.)	
Nils Anderson, Lake City	2.76
John R. Cummins, Eden Prairie	2.41
Dewain Cook, Jeffers	2.35
Frank Yahnke, Winona	2.34
Joseph Wood, Windom	2.34
L. Conrad & Sons, Luverne	2.31
P. H. Perry, Excelsior	2.21
Gust Johnson, Excelsior	2.17
J. A. Howard, Hammond	2.14
Geo. W. Strand, Taylors Falls	2.05
Hamlin V. Poore, Bird Island	1.92

SINGLE PLATES.				1st	2nd	3rd
				Prem.	Prem.	Prem.
Cheney—						
F. H. Gibbs, Merriam Park				\$1.00		
Joseph Wood, Windom .....					.75	
Anton Wilwerding, Freeport .....						.50
De Soto—						
C. E. Older, Luverne				1.00		
Nils Anderson, Lake City .....					.75	
Frank Yahnke, Winona .....						.50
Forest Garden—						
Gust Johnson, Excelsior				1.00		
Geo. W. Strand, Taylors Falls .....					.75	
P. H. Perry, Excelsior .....						.50
Hawkeye—						
Frank Yahnke, Winona				1.00		
Joseph Wood, Windom .....					.75	
J. A. Howard, Hammond .....						.50
New Ulm—						
J. V. Bailey, Newport				1.00		
Joseph Wood, Windom .....					.75	
Hamlin V. Poore, Bird Island .....						.50
Ocheeda—						
Joseph Wood, Windom				1.00		
Frank Yahnke, Winona .....					.75	
Rockford—						
Joseph Wood, Windom				1.00		
Gust Johnson, Excelsior .....					.75	
Dewain Cook, Jeffers .....						.50
Rollingstone—						
P. H. Perry, Excelsior				1.00		
Frank Yahnke, Winona .....					.75	
Joseph Wood, Windom .....						.50
Stoddard—						
Gust Johnson, Excelsior				1.00		
W. L. Parker, Farmington .....					.75	
Frank Yahnke, Winona .....						.50
Surprise—						
Frank Yahnke, Winona				1.00		
S. R. Spates, Wayzata .....					.75	
J. V. Bailey, Newport .....						.50
Weaver—						
Frank Yahnke, Winona				1.00		
Joseph Wood, Windom .....					.75	
Wolf Freestone—						
W. L. Parker, Farmington				1.00		
August Giesmann, Merriam Park .....					.75	
L. Conrad & Sons, Luverne .....						.50
Wolf Clingstone—						
P. H. Perry, Excelsior				1.00		
Dewain Cook, Jeffers .....					.75	
J. A. Howard, Hammond .....						.50
Wyant—						
Frank Yahnke, Winona				1.00		
J. A. Howard, Hammond .....					.75	
A. M. Mitchell, Hammond .....						.50
SUNDRIES.						
Pears—						
F. I. Harris, La Crescent				2.00		
Frank Yahnke, Winona					1.00	
SEEDLING PLUMS.						
One-half peck Seedling Plums—						
(\$15.00 to be divided pro rata)—						
Dewain Cook, Jeffers						\$8.70
J. A. Howard, Hammond						6.30
Best Plate of Seedling Plums to						
average not less than 1¼ inches—						
	1st.	2nd.	3rd.	4th.	5th.	
	Prem.	Prem.	Prem.	Prem.	Prem.	
Joseph Wood, Windom	\$5.00					
Hamlin V. Poore, Bird Island		\$4.00				
Dewain Cook, Jeffers			\$3.00			
L. Conrad & Sons, Luverne				\$2.00		
Frank Yahnke, Winona						\$1.00
WYMAN ELLIOT, Judge.						
GRAPES.						
Collection, not less than ten varieties.						
(\$60.00 to be divided pro rata.)						
Gust Johnson, Excelsior						\$60.00

SINGLE PLATES.

	1st. Prem.	2nd. Prem.	3rd. Prem
Agawam (Roger's No. 15)—			
Gust Johnson, Excelsior	\$1.50		
Geo. W. Strand, Taylors Falls		\$1.00	
Aminia (Roger's No. 39)—			
Gust Johnson, Excelsior	1.50		
Beta—			
E. G. Evestredt, Sacred Heart	1.50		
F. F. Farrar, White Bear Lake		1.00	
Geo. W. Strand, Taylors Falls			\$0.50
Brighton—			
Gust Johnson, Excelsior	1.50		
F. F. Farrar, White Bear Lake		1.00	
Geo. W. Strand, Taylors Falls .....			.50
Concord—			
Gust Johnson, Excelsior	1.50		
August Giesmann, Merriam Park		1.00	
F. F. Farrar, White Bear Lake .....			.50
Cottage—			
Gust Johnson, Excelsior	1.50		
Campbell's Early—			
Gust Johnson, Excelsior	1.50		
Geo. W. Strand, Taylors Falls		1.00	
F. F. Farrar, White Bear Lake .....			.50
Delaware—			
Gust Johnson, Excelsior	1.50		
Geo. W. Strand, Taylors Falls		1.00	
De Witt Clinton Ruff, St. Paul .....			.50
Duchess—			
Gust Johnson, Excelsior	1.50		
Early Victor—			
Gust Johnson, Excelsior	1.50		
Eldorado—			
Gust Johnson, Excelsior	1.50		
Empire State—			
Gust Johnson, Excelsior	1.50		
Green Mountain—			
F. F. Farrar, White Bear Lake	1.50		
Herbert (Roger's No. 44)—			
Gust Johnson, Excelsior	1.50		
F. F. Farrar, White Bear Lake		1.00	
Iona—			
Gust Johnson, Excelsior	1.50		
Janesville—			
F. F. Farrar, White Bear Lake	1.50		
Lindley (Roger's No. 9)—			
Gust Johnson, Excelsior	1.50		
Lady—			
Gust Johnson, Excelsior	1.50		
Martha—			
Gust Johnson, Excelsior	1.50		
Massasoit, (Roger's No. 3)—			
Gust Johnson, Excelsior	1.50		
Moore's Diamond—			
Gust Johnson, Excelsior	1.50		
Geo. W. Strand, Taylors Falls		1.00	
Moore's Early—			
H. B. Tillotson, Eureka	1.50		
Gust Johnson, Excelsior		1.00	
Niagara—			
Gust Johnson, Excelsior	1.50		
Geo. W. Strand, Taylors Falls		1.00	
Pocklington—			
Gust Johnson, Excelsior	1.50		
Pokeepsie Red—			
Isabella Barton, Excelsior	1.50		
Gust Johnson, Excelsior		1.00	
Telegraph—			
Gust Johnson, Excelsior	1.50		
Wilder (Roger's No. 4)—			
Gust Johnson, Excelsior	1.50		
F. F. Farrar, White Bear Lake		1.00	
Woodruff Red—			
Gust Johnson, Excelsior	1.50		
F. F. Farrar, White Bear Lake		1.00	
Worden—			
Gust Johnson, Excelsior	1.50		
F. F. Farrar, White Bear Lake		1.00	
Wyoming Red—			
Gust Johnson, Excelsior	1.50		
Geo. W. Strand, Taylors Falls		1.00	

A. BRACKETT, Judge.

PLANTS.

(For Professionals.)

	1st. Prem.	2nd. Prem.	3rd. Prem.
Collection of Foliage and Decorative Plants—			
Minneapolis Floral Co., Minneapolis	\$35.00		
E. Nagel & Son, Minneapolis		\$30.00	
John Vasatka, Minneapolis			\$20.00
Collection of Greenhouse Plants—			
Minneapolis Floral Co., Minneapolis	20.00		
E. Nagel & Son, Minneapolis		15.00	
John Vasatka, Minneapolis			10.00
Collection of Five Hanging Baskets—			
E. Nagel & Son, Minneapolis	6.00		
John Vasatka, Minneapolis		4.00	
Minneapolis Floral Co., Minneapolis			3.00
Collection of Coleus—			
E. Nagel & Son, Minneapolis	2.00		
John Vasatka, Minneapolis		1.00	
Minneapolis Floral Co., Minneapolis .....			.50
Group of Palms in Pot—			
E. Nagel & Son, Minneapolis	4.00		
Minneapolis Floral Co., Minneapolis		3.00	
John Vasatka, Minneapolis			2.00
Single Specimen Palm, one in pot—			
John Vasatka, Minneapolis	4.00		
Minneapolis Floral Co., Minneapolis		3.00	
E. Nagel & Son, Minneapolis			2.00
Single Specimen Fern, one in pot—			
E. Nagel & Son, Minneapolis	4.00		
John Vasatka, Minneapolis		3.00	
Minneapolis Floral Co., Minneapolis			2.00
Collection of Geraniums in Bloom—			
E. Nagel & Son, Minneapolis	4.00		
John Vasatka, Minneapolis		3.00	
Minneapolis Floral Co., Minneapolis			2.00
Collection of Carnations in Bloom—			
E. Nagel & Son, Minneapolis	3.00		
Minneapolis Floral Co., Minneapolis		2.00	
Vase Filled with Plants—			
E. Nagel & Son, Minneapolis	5.00		
Minneapolis Floral Co., Minneapolis		4.00	
John Vasatka, Minneapolis			3.00

CUT FLOWERS.

(For professionals.)

	1st. Prem.	2nd. Prem.	3rd. Prem.
Best Collection of Cut Flowers, not less than fifteen varieties.			
Minneapolis Floral Co., Minneapolis	\$25.00		
E. Nagel & Son, Minneapolis		\$15.00	
John Vasatka, Minneapolis			\$10.00
Collection of Dahlias—			
Geo. E. Kersten, Minneapolis	4.00		
John Vasatka, Minneapolis		2.50	
Collection of Sweet Peas—			
E. Nagel & Son, Minneapolis	4.00		
John Vasatka, Minneapolis		2.50	
Collection of Asters—			
E. Nagel & Son, Minneapolis	4.00		
Mary Murphy, Stillwater		2.50	
John Vasatka, Minneapolis			1.50
Collection of Carnations—			
Minneapolis Floral Co., Minneapolis	4.00		
John Vasatka, Minneapolis		2.50	
E. Nagel & Son, Minneapolis			1.50
Collection of Roses—			
Minneapolis Floral Co., Minneapolis	4.00		
John Vasatka, Minneapolis		2.50	
E. Nagel & Son, Minneapolis			1.50
Collection of Gladioli—			
Geo. E. Kersten, Minneapolis	4.00		
E. Nagel & Son, Minneapolis		2.50	
John Vasatka, Minneapolis			1.50

PREMIUMS AWARDED AT STATE FAIR.

425

DESIGNS, BASKETS AND BOUQUETS.

(For professionals.)

	1st. Prem.	2nd. Prem.	3rd. Prem.	4th. Prem.
Table Decoration—				
Minneapolis Floral Co., Minneapolis	\$30.00			
R. A. Latham, Minneapolis		\$25.00		
E. Nagel & Son, Minneapolis			\$20.00	
John Vasatka, Minneapolis				\$15.00
Twelve Inch Basket of Flowers—				
Minneapolis Floral Co., Minneapolis	5.00			
E. Nagel & Son, Minneapolis		3.00		
John Vasatka, Minneapolis			2.00	
Table Bouquet—				
Minneapolis Floral Co., Minneapolis	5.00			
E. Nagel & Son, Minneapolis		3.00		
Charles Krause, Rosetown			2.00	
John Vasatka, Minneapolis				1.00
Hand Bouquet—				
Minneapolis Floral Co., Minneapolis	3.00			
E. Nagel & Son, Minneapolis		2.00		
John Vasatka, Minneapolis			1.00	
Bridal Bouquet—				
Minneapolis Floral Co., Minneapolis	3.00			
John Vasatka, Minneapolis		2.00		
E. Nagel & Son, Minneapolis			1.00	

AUGUST SWANSON, Judge.

CUT FLOWERS.

(For amateurs.)

	1st. Prem.	2nd. Prem.	3rd. Prem.	4th. Prem.
Collection of Asters—				
Edwin Doble, St. Anthony Park	\$4.00			
R. A. Koepker, Minneapolis		\$2.50		
F. F. Farrar, White Bear Lake			\$1.50	
E. D. Fuller, Minneapolis				\$1.00
Collection of Dahlias—				
F. F. Farrar, White Bear Lake	4.00			
Geo. E. Kersten, Minneapolis		2.50		
E. A. Farmer, Minneapolis			1.50	
J. M. Scharff, St. Paul				1.00
Collection of Nasturtiums—				
H. B. Tillotson, Eureka	4.00			
J. M. Scharff, St. Paul		2.50		
W. W. Hill, Minneapolis			1.50	
Edwin Doble, St. Anthony Park				1.00
Collection of Gladioli—				
C. M. Hoag, Minneapolis	4.00			
F. F. Farrar, White Bear Lake		2.50		
Geo. E. Kersten, Minneapolis			1.50	
S. R. Spates, Wayzata				1.00
Collection of Marguerite Carnations—				
Chas. Krause, Rosetown	4.00			
D. Gantzer, Merriam Park		2.50		
F. H. Gibbs, St. Anthony Park			1.50	
Collection of Pansies—				
S. M. C. Browne, St. Paul	4.00			
Chas. Krause, Rosetown		2.50		
F. F. Farrar, White Bear Lake			1.50	
Daniel Gantzer, Merriam Park				1.00
Collection of Verbenas—				
R. A. Koepker, Minneapolis	4.00			
W. L. Cook, St. Paul		2.50		
Edwin Doble, St. Anthony Park			1.50	
Chas. Krause, Rosetown				1.00
Collection of Zinnias—				
F. F. Farrar, White Bear Lake	4.00			
S. M. C. Browne, St. Paul		2.50		
Chas. Krause, Rosetown			1.50	
Daniel Gantzer, Merriam Park				1.00
Collection of Perennial Phlox—				
B. T. Hoyt, St. Paul	4.00			
S. R. Spates, Wayzata		2.50		
F. H. Gibbs, St. Anthony Park			1.50	
Collection of Sweet Peas—				
DeWitt Clinton Ruff, St. Paul	4.00			

A. McPhee, St. Paul	2.50		
S. R. Spates, Wayzata		1.50	
M. K. Bond, Minneapolis			1.00
Collection of Snapdragons—			
DeWitt-Clinton Ruff, St. Paul	4.00		
Chas. Krause, Rosetown	2.50		
Edwin Doble, St. Anthony Park		1.50	
Daniel Gantzer, Merriam Park			1.00
Collection of Gaillardias—			
Chas. Krause, Rosetown	4.00		
Daniel Gantzer, Merriam Park	2.50		
De Witt Clinton Ruff, St. Paul		1.50	
Best Collection of Perennials, not less than ten varieties—			
B. T. Hoyt, St. Paul	4.00		
De Witt Clinton Ruff, St. Paul		3.00	
F. H. Gibbs, St. Anthony Park			2.00
Best Collection of Annuals, not less than fifteen varieties—			
Chas. Krause, Rosetown	4.00		
Daniel Gantzer, Merriam Park		3.00	
DeWitt Clinton Ruff, St. Paul			2.00

E. NAGEL, Judge.

Question.—"If the Salome apple is raised in Minnesota, how is it for hardiness, quality and commercial purposes?"

Prof. Hansen: I do not know about Minnesota, but I know it is raised at La Crosse. I think the Salome has not been a success in the north. It is rather undersized and overbears, and I do not think we should recommend it.

Question.—"How can the waxed paper be prepared and what is the cost of the same?"

Prof. Hansen: I have taken just ordinary newspaper and spread melted wax on it and then cut it up into strips, just melted grafting wax.

Another Remedy for Dandelions.—To the person who is trying to maintain a lawn dandelions mean nothing but a source of work and annoyance. Cutting them off, even below the surface, seems merely to have the effect of making them multiply the faster. A spoonful of gasoline poured into the centre of the head of each dandelion or chicory will destroy them root and branch within twenty to forty-eight hours. The gasoline penetrates throughout the plant, even into the tip of the roots, causing a slimy decomposition. Apparently gasoline has some affinity for the milk or latex in these plants and follows the latex tubes through the whole plant. Grass and shrubbery are not injured by the gasoline unless it is carelessly applied in undue quantities.—*Country Life in America.*

NURSERY AND ORCHARD CONDITIONS IN WESTERN OREGON IN AUGUST, 1906.

PROF. F. L. WASHBURN, ST. ANTHONY PARK.

The writer had occasion to make a hurried trip to the Pacific Coast in August of this year, and while there it occurred to him that some of the conditions which existed in nurseries of the northwestern Pacific Coast would interest Minnesota nurserymen, in the way of comparison with conditions here; hence he visited a large nursery near Portland, Oregon, where he met with most courteous treatment on the part of the proprietor.

Their seedling roots they purchase for the most part in Kansas, paying from four to five dollars per thousand for the best apple roots, and five dollars per thousand for pear roots. As a rule, the stock is budded onto these. The peach is budded on its own roots. These buds, as a rule, do well, and I saw stock one year old from the bud, really representing only six months' growth, over four feet high. These were apples. Some of the Italian prunes, a few of them at least, were ten feet high. These are cut back to make three foot trunks, and are pruned to four or five limbs. Sometimes when a bud has failed to take, they resort to grafting.

Oregon nurserymen aim to sell out all their stock when one year old, and they sell practically during the entire year, at least during eight months. This dealer informed me that he sold quite largely in the middle states, and often shipped to New York, though most of his sales were in Oregon and Washington. Apple trees are retailed at 12½c, and pears at 25c; cherries bring about 20c. Spitzenbergs and Newtown Pippins are called for mostly for planting by eastern Oregon growers, and Baldwins, Northern Spy and Jonathans for western Oregon. Of cherries, the Royal Ann, the Lambert and the Bing are most in evidence.

Cultivation of nurseries stops in July, and, naturally, there is absolutely nothing done for winter protection. They combat lice with quassia and soap, the same commodities being used in large quantities in the Oregon hop fields; scab they fight with Bordeaux; San Jose scale with lime and sulphur washes, fumigation and the elimination of infested stock.

The scale problem there appears to have resolved itself into keeping the pest out of the nurseries and choice orchards. From personal observations in various parts of western Oregon, I should judge that with all their inspectors and laws they have despaired

of eradicating it everywhere, for I saw hundreds of apple, pear and other trees dying and dead with the San Jose scale. Bushels of fruit were observed on trees also showing the unmistakable red spots which denote its presence, even when seen at some distance. Old neglected orchards, a fruit tree here and there, wild crab trees, plum thickets, and especially land held for speculation planted to fruit trees and subsequently neglected, are all particular sources of infection, and the cause of its continued presence. One good move is the forbidding of the sale of infested fruit, and as soon as any of this undesirable material is exposed for sale, and observed by inspectors or deputies, it is destroyed—or “kerosened”—and thus made unfit for use.

A nursery inspector may visit a nursery once a year, or may cause a nurseryman to tremble in his boots twice or three times, there evidently being no set time for his visits. The greatest cause of fear, however, on the part of the nurseryman is that he will have too much stock and too few customers for the same.

The apple and prune orchards were, at the time of this visit, loaded with fruit. Growers there have planted too many Italian prunes, and the tendency for some time has been to work into other fruits. Bartlett pears and plums and prunes going to waste under trees is not an uncommon sight.

But if the apples and prunes of western Oregon delighted our eyes, what shall we say of the beautifully colored fruit of the Wenatchee Valley, in eastern Washington. The train sped thru an irrigated heaven for the fruit grower, and the Wenatchee Valley melon, as we can testify by personal experience, needs no sugar and *should* be eaten in a bathtub. What adds to the interest of it all is the fact that away up on the hills above the Columbia River, on the plateau which stretches north toward British Columbia, the finest kind of peaches and other fruits are raised without irrigation.

Question.—“Should apple trees be sprayed before they bloom?”

Prof. Hansen: No, it kills the bees and reduces the crop of fruit.

Question.—“Will it do any harm to plow around apple trees late in the fall if the trees are protected so they will not be injured?”

Prof Hansen: The trouble in plowing too late, especially in sod, is that it is apt to cause a second growth. It is better not to cultivate or break up the sod in an orchard in the fall.

MY SEEDLING APPLE.

MRS. M. A. KNOWLES, EXCELSIOR.

In December, 1905, the writer made entry of her seedling apple, which she has named "Keep-Till-June," in the contest for the \$1,000 prize offered by the Minnesota State Horticultural Society.

Twenty-one years ago, my husband, Mr. J. D. Knowles, and myself, moved onto the little farm of about eight acres, where I have continued to live since his death several years ago, two miles east of Excelsior, where this apple tree stands.

We found in the orchard an apple sprout, about the size of a man's thumb that had grown from the root of a tree, the grafted portion of which was dead. I do not remember the exact date when it began to bear, but I remember that sixteen or more years ago apples from this tree were taken to the winter meeting of

Specimen of Mrs. Knowles' seedling apple, "Keep-Till-June".

the Minnesota State Horticultural Society, and that no one seemed to know anything about it, although it was thought by some to be a Rollin's Pippin.

We never kept an exact account of the number of bushels of fruit taken from the tree, for it was gathered and sold with the other fruit. As its name indicates it is a very late keeper; some-

times they kept until July. At the present writing (September, 1906) I have several sound specimens of last year's fruit.

This year the tree bore a very light crop, but last year it hung full of its beautiful, light golden-colored fruit, the largest of which measured ten and one-fourth to ten and one-half inches in circumference.

The tree is hardy and suffers but little, if any, from blight. Last year, when all other trees in my orchard blighted, the Keep-

Mrs. Knowles' seedling apple tree.

Till-June showed not the slightest injury. It has suffered some from sun-scald, and yet the tree is thifty, showing every sign of a long, useful life. It is thirty-one inches in circumference, trunk measure, and about twenty feet in height, with wide-spreading branches. It has no chance to do its best, as within twenty-five or thirty feet of it stand three large soft maples. It is also shaded by other rows of trees, both morning and afternoon.

The fruit cooks quickly, and I consider it a good apple, not only for eating but for pies and sauce, and it makes a beautiful jelly.

ORNAMENTAL TREE PLANTING.

FRANK H. NUTTER, MINNEAPOLIS.

(Presented at meeting of So. Minn. Hort. Society.)

Francis Bacon, writing nearly three centuries ago, tells us in an oft quoted passage, as the results of his observation, that "Men come to build stately sooner than to garden finely." In these latter days we are glad to recognize a change and find that there are many exceptions to this rule. This is fortunate, for probably if many of us here present were obliged to first achieve the stately homes the fine gardens would be indefinitely postponed. In fact, many of the most attractive gardens and lawns we see are connected with humble homes, the occupants of which often have truer tastes and more enthusiasm for nature than those of greater wealth, who entrust the improvement of their grounds to hired gardeners and workmen.

Still there is much to be done to educate the people up to a true appreciation of the value of "outdoor art," as it is often termed. Many a man will spend thousands of dollars on a house, and a proportionately large sum on the interior furnishings and decorations, and then hesitate to spend one per cent of the total amount in improving and ornamenting the grounds surrounding it. He will gladly, and as a proper business precaution, pay an architect a goodly commission to plan and superintend the building and its interior and then dismiss as an extravagant idea the suggestion to employ similar assistance in connection with its grounds. He overlooks the fact that with occupancy and use the deterioration of the house and its contents begins, while without the opposite rule holds. In fifteen or twenty years the house, with the best of care, will be an old one, while the gardens and lawns will have arrived at a maturity that will develop their full beauty and more than anything else help to make the whole in reality that thing which we all desire and aspire to, a home.

In the opening up of a new country, the so-called practical rather than the ornamental must receive attention. The chilling blasts of winter and the equally disastrous hot winds of summer soon convince the pioneer of the prairie that shelter belts and groves are a necessity. These once established, orcharding and small fruits take the planter's attention, till at last the question of planting for purposes of beauty as well as strict utility is reached.

The planter in entering on his work should study the special conditions of his particular problem, and as he would hardly be-

gin the building of a woodshed or corncrib without some sort of a plan, even if only roughly pencilled on a board, so he should esteem the ornamentation of his grounds at least worthy of a similar effort. Where one can start the planning from the very beginning, locating first the buildings and the drives and walks, if any, the results are generally more satisfactory. In relation to this it may be said that convenience for accomplishing the daily tasks, proper drainage and conditions conducive to the best health of the family, must be fully considered and met, for art is false or, at least, misplaced, if it interferes in any way with the true purpose of the thing it is intended to adorn. The skeleton of the design thus being furnished, either by our own planning or the chance efforts of our predecessors, it lies with the planter to fill up and beautify this framework.

The artist, working with oil colors on his canvas and the artist developing with nature's materials a picture on some small area of the earth's surface, must to some extent, at least, be governed by the same rules, and one is that both light and shade are essential, and these essentials should appear in broad masses rather than in scattered and disconnected blotches; so when we see a lawn all broken up with patches of plants and scattered single shrubs, we cannot but be dissatisfied with the spotted effect. Banish these invaders to a connected mass of planting around the border of the lawn, leaving a clear space of sunlit sward in the center, and the picture is much more satisfactory.

One thing to be avoided in planning ornamental planting is overcrowding. The ardent salesman, not entirely forgetful of commissions, perhaps, is apt to suggest close planting for immediate effect and thinning out later. I recall that at a recent meeting of the state horticultural society a man was pointed out to me as the best nursery agent in the northwest. In reply to my enquiry, "Why so?", my informant replied "Why, he can sell a man \$50 worth of ornamental stock when he has not room for \$5 worth."

I could mention grounds of public buildings, not many hours' ride from here, which have been dotted all over with elm, linden and other large growing trees, but a few feet apart, and which in a few years, as the life of a tree goes, will be touching each other on all sides. This may be good forestry, but it is very poor landscape work. Street trees are also crowded in like manner. I have seen five fine elms set in front of one forty-foot lot.

Some of the older cities in southern Minnesota are shining examples of this mistake, and if a discriminating cyclone, avoiding all else, could sweep their streets clear of all the present trees, allowing them to start afresh on proper lines, in a few years they would acknowledge it as a blessing in disguise.

Avoid, therefore, this mistake of planting thick and thinning afterward, for it is a delusion and a snare. Where the trees can be transplanted and used elsewhere it may occasionally be done, but where it involves the use of ax and grubhoe it will cause trouble in the family if on private grounds, and almost the overthrow of political parties if on public grounds.

The value of flowering shrubs for ornamental purposes is too often overlooked by those engaged in this work, but by their use much of the overcrowding of the large trees may be avoided. The fact is that on an ordinary town lot, especially if there be good trees in the street in front of it, there is little use for large trees, except to give shade at some exposed point. Some of the smaller choice varieties, as Weirs' maple and cutleaf birch, and choice specimens of evergreens, will be available, but the main dependence will be on these shrubs. The list of shrubs from which to choose, even in this severe climate, is sufficiently long, and as we go southward it increases rapidly. First, we have the native wild species of our meadows and woodlands, the value and number of which are generally overlooked. The nurseryman's list, where he makes a specialty in this line and of the propagating and development of new varieties, is an astonishing one. Where, among the lilacs, our parents knew perhaps two kinds, the common and Persian, and two colors, the purple and white, one of the catalogues on my desk offers forty-six named varieties. The old-fashioned honeysuckle has been multiplied ten fold, the syringas and spireas still more, and if we turn to the peonies, phlox and other hardy perennials the increase is still more marvelous. With this ample supply of material to draw upon, let us proceed to further develop our plan.

If a study of the locality shows, as it may on rare occasions, that the outlook in all directions is entirely monotonous and uninteresting, and the area of the ground to be improved is sufficient, we may extend our border plantings entirely around the property, using trees and shrubs tall enough to conceal the dreary world without, and with this as a frame arrange our picture entirely within.

Usually, however, in some direction there will be a point of interest in the landscape, as a picturesque hilltop or lake, the spire of a distant church or some other striking object, and this we will make the most of by leaving the necessary opening in the border planting and so locating the plantings upon the lawn and nearer the house that the object of interest will be seen from the windows or veranda at the end of the prepared vista and framed in the opening of the border plantation and, perhaps, further enclosed by the overarching branches of some large tree. It is astonishing what striking effects sometimes result from such a framing, and the object, which, perhaps, in the wide sweep of the horizon seemed to be insignificant, stands out as strongly as though it were a picture on the wall of our outdoor apartment.

In our inspection of the surrounding landscape we will be unusually fortunate if we do not find also some features we wish were not there. Here our border planting will serve another purpose, and by increasing its height and thickness and, perhaps, also by the use of evergreens, lest the falling leaves of autumn should, during the long months of winter, reveal to our gaze the obnoxious object, we will conceal it from our sight. If on the grounds themselves we should be obliged to maintain structures which we do not wish to be too prominent, this same use of trees and shrubs will be an efficient aid. Most useful for this purpose are the various kinds of hardy vines, either annual or perennial, from the morning glory, hop, nasturtium or even the despised wild cucumber, to the climbing honeysuckle, clematis, Virginia creeper, wild grape, etc. Truly they often, like charity, will cover a multitude of sins, architectural and otherwise.

The house and other buildings often stand bare and isolated on the lot, as though they had no special connection therewith and were only waiting further orders to move on and take up their abode elsewhere. A proper arrangement of an irregular bed of choice shrubs of not too rampant growth, around such portions of the foundations and verandas as the planning of the house and grounds will permit, and the use of vines, where feasible, on veranda posts, outside chimneys, stonework, etc., will remedy all this and, as it has been happily expressed, "Marry the house to the grounds."

As a protest against the old custom of shutting out the passer-by from all the enjoyment of the beauty of private grounds,

by high walls and fences topped with broken glass and sharpened spikes or by the impenetrable hedges, people of late have gone to the other extreme and thrown everything open to view, and condemn all fences as evident tokens of selfishness and caste. While this is better than the old way, still it goes too far when it deprives the owner entirely of the privacy he is entitled to, for but few of us care to live altogether under the public eye. A happy medium can be reached, I think, by throwing open the front portion of the grounds, if in a city or village where trespassers, either quadrupeds or bipeds, are ruled out, and even co-operating with neighbors in the harmonious planting and improvement of the adjacent lawns. The rear portions of the properties, however, should be screened off from observers, by trellises, hedges, or irregular shrub borders, to serve as an outside room to the house proper, for it is a most pleasant discovery of these latter days that it is good for all, old and young, male and female, to live and pursue their daily tasks as far as possible in the open air. Here also may be located the formal garden, if there be one, for it loses its most attractive feature if it does not afford full privacy to the visitor.

Here also the owner may experiment or ride his horticultural or other hobby, if he is so fortunate as to possess one, to his heart's content, without fear of ridicule or unfriendly criticisms.

Fashions change in gardening as in other pursuits, and, luckily, most changes of late have been for the better. A generation ago beds of brilliant geraniums decked the lawns; then we had the ribbon beds of colors, etc. Castor beans, cannas and caladiums still persist, but the present tendency is to the greater use of hardy perennials, of which we have so many and such fine varieties, giving beautiful effects when well arranged, and also permanent beds, avoiding the expense of annual renewals. I will admit a liking for the sturdy geraniums, so persistent in the face of unfavorable conditions, but perhaps this is the result of early associations; also for the cannas, caladiums and castor beans, if properly placed, but this is not in the middle of a lawn area, which should be kept unbroken. These plantings pertain rather to the vicinity of the buildings or other plantings, and often these larger plants, especially of the perennials, may be used with striking effect along the borders of the shrubberies or even among them. A clump of golden glow, larkspur, tiger or other tall lilies

or such like plants, will often add much to a group of shrubs, especially if in bloom when the shrubs themselves show nothing but foliage.

The choice and arrangement of the individual shrubs, which go to make up these so-called borders or beds, is of course a matter of personal taste, but in the matter of placing them the rule laid down in the first part of this paper should be followed, and those of the same kind should be grouped together rather than scattered, so as to give, when in flower, masses rather than spots of color. The tall growing kinds should be in the center, or back of the group—according as to how it is to be viewed, whether from the front only or from all sides—with the smaller varieties around and the most dwarf at the outer edges, so as to bring the foliage and bloom down to the green sward of the lawn.

If the grounds to be improved belong to a country house which is occupied only during certain months of the summer, the owner would naturally select for his planting such species as blossom at that particular season, for it would be foolish to spend money for results that no one would enjoy and appreciate. Why then do we so often forget that we generally occupy our homes the year round, and that in this climate there are several months of winter, during which the lawn and garden usually appear only as a barren waste?

A little forethought will provide a winter garden in some portion of the ground which even a "shut-in," if such unfortunate be in the family, may enjoy from the window. We here are too far north to use the rhododendrons, hollies and other so-called broad-leaved evergreens, but the small and choice varieties of conifers are at home with us to form the background of our winter outlook; shrubs and vines with persistent berries, such as the bittersweets, cranberry bush, sumach, inkberry, barberries and others, will take the place of flowers; and seen against the drifts of snow in the bright winter sunlight, the brilliant crimson, green and golden bark of different species of dogwood and willow will glow as though alive.

Time fails me to speak of the beautiful and hardy peonies, to be obtained now in hundreds of varieties and which promise to be par-excellence the flower of the poor man as well as of the millionaire; of the ferns and other native plants, which will make green some spot where even grass refuses to grow, and of many other species so bountifully placed at our disposal to cheer and

gladden the surroundings of our homes. But they are all beautiful and, therefore, "joys forever," and we are both neglectful and ungrateful if we fail to make a wise and intelligent choice and use of them.

QUESTION BOX.

Question.—"Is a crown graft better than a piece graft and, if so, why?"

Prof. Hansen: I think you get a little better stand from a crown graft, but at the end of four years I don't know that you will find any difference. If we open that question we ought to have two hours to discuss it. I think the true crown graft makes a little better tree.

Question.—"How is a dibber made for planting apple grafts and how is it used?"

Prof. Hansen: A dibber is simply a pointed stick covered with iron. Take a spade handle and sharpen the lower part of it and make a pointed stick out of it; but the best way is to buy of a seed house a dibber which has a handle on it to push it down. I think the best dibber is this round one, but I think the spade is the best of all. A man and a spade make a fine combination.

Question.—"If a nurseryman hires a man to work and sets him to work hoeing root grafts and he cuts one-tenth of them off can he collect pay for his work?"

Mr. J. M. Underwood: That is really a legal question, and I am not a lawyer. I think common sense would answer a question of that kind. I should say he could collect pay for his work, and any man who would set a man to work hoeing root grafts doesn't understand his business. I would not have any man hoeing among them. I think in that case the employer would be to blame. I recollect at one time a good many years ago I was out in the nursery with Dr. Jewell. He saw a man hoeing grafts, and every little while he would bark one. The doctor reprimanded him for it, and the man immediately skinned several more grafts, and as long as the doctor stood looking at him he skinned grafts with the hoe. I saw where the trouble was, and I told the doctor he wanted to show him how to do it, and then come away from him and let him alone, or he would hoe off the whole field. The fellow was so nervous after being reprimanded he could not work at all. I took that man out of the field because he could not work—but I never use a hoe among grafts.

Mr. Frank Yahnke: What would you use?

Mr. Underwood: The best thing I ever found is a weeder. We employ boys and children and furnish them with weeders.

Mr. Yahnke: They are a good thing.

Mr. Underwood: They do it carefully and do it all by hand. I never want to use anything as clumsy as a hoe with which to do delicate work.

Secretary's Corner.

DELEGATE FROM THE NORTHEASTERN IOWA HORTICULTURAL SOCIETY.—Mr. C. H. True, secretary of the Northeastern Iowa Horticultural Society is to be with us at our coming annual meeting as representative of that society.

AMERICAN BREEDER'S ASSOCIATION.—The announcement of the annual program of this national association is out. The meeting will be held at Columbus, Ohio, Jan. 15. h to 18 h, '07. Will the Plant Breeders' Auxiliary of the Minnesota Society be represented at that gathering?

A NATIONAL CONGRESS OF HORTICULTURE.—A circular is out from H. C. Irish, Sec'y. of the National Council of Horticulture, suggesting the calling of a National Congress of Horticulture, to convene at Jamestown, Va., sometime during the autumn of 1907. A national exposition being held at Jamestown at that time makes it a convenient place for such a gathering. Further particulars about this proposed gathering will be given as they may develop.

ROYAL EXHIBITION.—The Massachusetts Horticultural Society is offering \$400 in prizes for exhibits of fruits and vegetables, to be held in the exhibition rooms of the society, Oct. 10 and 11; and as special prizes on November 2-4, during the chrysanthemum show, for best decorated table laid for six covers, 1st, \$75.00; 2d, \$50.00; 3d, \$35.00, and suitable medals. We do not expect any of our members to compete for these prizes, but rather to note what sister organizations are doing.

THE SOUTH DAKOTA FRUIT CROP.—"The fruit crop was immense here this season. There were plenty of strawberries, currants, gooseberries, apples and plums to supply home market. Grapes did nicely, but only a few have them. Of course we have to ship in our stocks of winter apples, but I am confident that this will not always be so. I have a young orchard of 400 native plums, 5 years old, from which I sold \$125.00 worth of the choicest fruit I ever saw. The Col. Price orchard here marketed about 250 bushels each of Duchess and Wealthy apples. M. J. DeWolf, Letcher, S. D.

SPRAYING FOR THE SAN JOSE SCALE.—A bulletin just issued from the agricultural experiment station at Morgantown, W. Va., Bulletin 107, gives in detail the results of the spraying done with various compounds for the purpose of exterminating the San Jose scale. The conclusion resulting from these experiments, summed up especially on the last page of the bulletin, will prove interesting reading to many who would like to know more about what is being done towards getting rid of this pest that has not yet, as far as we know, secured a foothold in Minnesota.

VOTE FOR AN ACT TO AMEND—the constitution of the State of Minnesota providing that "Any person may sell or peddle any products of the farm or garden occupied and cultivated by himself without obtaining a license therefor" The words in quotation marks above are the exact reading of the proposed amendment, which, if passed, will be Section 18, Article 1, of the constitution. The horticultural society at its last annual meeting adopted unanimously resolutions endorsing this amendment. Members of the society who are voters should take note of the above on election day and help to secure the passage of this important amendment.

SUMMER APPLES AT DULUTH.—A sample of the Duchess of Oldenburg from the grounds of Mr. R. M. Hunter, at Duluth, sent by Mr. Henry Cleveland, came by mail on Sept. 22, still in excellent condition. A summer apple on the shores of Lake Superior becomes a fall apple, and if fall apples can be well ripened there, especially late fall apples like the Wealthy, they should keep well into the winter. The growing of apples will some time become an important industry in that region, where on account of nearness of a great lake the fall season is so much more exempt from early freezing weather.

DELEGATE FROM WISCONSIN TO THE ANNUAL MEETING.—The executive board of the Wisconsin Horticultural Society has appointed Mr. W. J. Moyle, a prominent nurseryman and fruit grower, of Union Grove, Wis., as representative of that society to our coming annual meeting. We are likely to have other representatives of that society also in the persons of Geo. J. Kellogg and A. J. Philips, who have both been with us at most of our meetings for a number of years—and we would hardly know how to get along without them. Other Wisconsin horticulturists are equally welcome, and we hope they will bring with them some valuable apple seedlings and compete with Minnesota growers for the apple seedling prizes, which at our annual meetings are open to the western half of Wisconsin on the same terms as to members from Minnesota.

"FARM WIND-BREAKS AND SHELTER-BELTS."—The Webb Pub. Co., St. Paul, has lately issued a manual of some seventy pages on a subject of much practical importance to the people of our state, and especially to those whose homes are found in the prairie section, entitled "Farm Wind-Breaks and Shelter-Belts." Examination shows that practically all the instruction needed for construction and maintenance of successful shelter belts is grouped together in this brief compass, and to those of our readers who need such a protection to a prairie home this manual is commended. To say that it is prepared by Prof. S. B. Green, horticulturist at the state university, is assurance of its practical character. It is made up in large part of selections from his other writings, arranged together for this purpose, and is offered for sale by the publishers in paper binding for 25c

CYCLOPEDIA OF AMERICAN HORTICULTURE.—A new and enlarged edition, increased from four to six volumes, of this very complete work is just being issued by the publishers, Doubleday, Page & Co., New York. Some new matter has been added in this issue, though we understand that the increase is largely due to the addition of a great many full page half tone plates, making the work exceedingly rich in illustrations. The first issue of four volumes was sold for \$20. This issue of six volumes is offered for a time for \$2.80, bound in green and gold buckram cloth, or they can be purchased at \$3.00 payable monthly until the full amount of \$24.00 is paid, amounting to \$4.00 per volume. They can be secured through this office or by communicating with the publishers direct. It seems almost needless to say that this cyclopedia is the work of Prof. L. H. Bailey, who has written so many of the latest and most valuable text books on horticulture that are now very generally consulted. When you have this set in your library, you have almost everything needed in the way of horticultural literature, as nearly every topic suggested can be found developed in its proper place alphabetically arranged in one of the six volumes.

DELEGATES TO THE UPPER MISSISSIPPI RIVER IMPROVEMENT ASSOCIATION.—By request of the officers of the association referred to, three delegates were appointed to represent our society at the session of that association held in Minneapolis, Oct. 9 and 10. The following members served in that capacity, Geo. T. Halbert and S. A. Stockwell, of Minneapolis, and Ed Yanish, of St. Paul.

A SEEDLING OF THE MINER PLUM.—Mr. J. M. Underwood sent from the grounds of the Jewell Nursery Co., Lake City, to this office, Sept. 21st, a basket of plums of a variety grown from the seed of the Miner, and its appearance would indicate its ancestry. It is a plum of uniformly good size, dark red color, with rather thick skin—which might tend to make it curculio proof—and of excellent flavor. It is not freestone, but its other good qualities makes it apparently a valuable fruit. Samples of the same fruit came to this office last year. The writer is not aware whether this plum is being propagated, but it certainly has merit entitling it to much consideration.

DEATH OF WM. OXFORD.—A clipping from a local paper gives the following information: "Wm. Oxford of Crooked Creek, died Oct. 6th at the Caledonia hospital, where he had been receiving treatment the past several months. Mr. Oxford was one of the pioneer settlers of this country. He was born at Southampton, England, April 1, 1825, and April 9, 1849, married Miss Mary Wakefield. They came to this country shortly afterward and located temporarily at Boston, from which place they moved to Allamakee County, Iowa, in 1851, and in 1852 settled on a farm in Crooked Creek, which they sold some years ago to their son-in-law, Joseph Till. Mrs. Oxford died about a year ago. They are survived by a son and two daughters." Mr. Oxford, while not as well known as some of the older members of our society, was one of the most loyal members of the association, and though for some time anticipating his death it is none the less deplored. He had been a member of the society, as the reports show, for the last thirteen years. My attention was first called to him personally at the time of the exhibit of fruit at the World's Fair at Chicago. Mr. Oxford contributed at that time one of the best variety collections of fruit that were shown there. At the state fair for many years he was a constant exhibitor, and in every way as opportunity offered he contributed to the welfare and success of the society. In recognition of his sterling services to the association, at the annual meeting in 1899 Mr. Oxford was made an honorary life member of the society at the same time with Mr. Lord, Mr. Richardson, Prof. Hansen, and others.

DEATH OF R. J. MENDENHALL.—Just as the forms are being made up for this number, too late for an extended notice, the death of this pioneer member of our society is announced, which occurred at his home at 1714 Stevens Ave., Minneapolis, Oct. 19, at the advanced age of seventy-eight years. Fuller notice of the decease of this valued member will be found in a later number.

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THE LEGAL RELATIONS OF THE NURSERYMAN, HIS AGENT AND THE CUSTOMER.

W. M. BABCOCK, MINNEAPOLIS.

The subject assigned to me is so large that I can only touch upon a few points within the time allowed me. It involves the whole law of "sales," on which large text books have been written, the laws of agency, warranty and breach of contract and damages for the same. You will thus see that I can only make a few categorical statements of general principles, but for the law applying to any particular case I must refer you to your own lawyer.

The legal relation of the nurseryman to his agent is that of any principal to his agent; the rights and liabilities are the same, the duties of both are the same, the power of the agent to bind his principal is the same.

The legal relation of the nurseryman to his customer is in general the same as that of any manufacturer or merchant selling goods to a customer. There is no material difference between them except such as is involved in the kind of wares sold, grown or manufactured by each.

The agent is bound at his peril to carry out the express orders of his principal and is responsible to him for failure to do so. As between them he has no right to warrant the goods sold or make representation as to their kind, quality or the condition of the plants sold beyond the express or implied authority conferred upon him. In the absence of orders to the contrary he is authorized to warrant the plants sold as good, marketable stock, fit for the purpose for which they are sold unless he is selling stock then in presence of the customer, for the nurseryman is presumed to sell good, marketable stock only unless the customer picks out his own plants; then if asked any question he must tell the truth.

The principal is not bound by any opinions expressed by the agent as differentiated from a warranty; nor has the customer, on

the other hand, a right to rely upon them, except as opinions.

As between the customer and the agent, the customer has a right to rely upon any warranty, statement or material representation made by the agent, within the scope of his business as seller of nursery stock, as to its kind and quality and the ability of his principal to carry out his contracts and deliver the goods sold. If the customer wants to hold the principal to an express agreement as to what he can expect from the plants in the future, he should require a warranty, but the right to give such a warranty by the agent will depend upon the authority actually conferred upon the agent or existing in him by reason of his position with the principal. If a notice of lack of authority to warrant is brought home to the customer, he cannot hold the principal responsible for such warranty. This is often done by a printed notice in the sale blank or order blank or in the catalogues supplied to the agent for soliciting business, to the effect that no statement or representation not included in the written contract or differing from the catalogue shall bind the principal. And here it is to be noted that if a written contract is entered into for the sale of plants or any other article, no statement or representation varying or tending to vary the terms of the written contract is in general admissible in evidence. An oral warranty in such cases is not valid, as a rule.

It is important that the customer guard his rights by insisting that every warranty or representation or promise made shall be embodied in the written contract. The principal on the other hand has a right to rely upon such contract as a complete contract, subject to the right of rescission or cancellation for fraud or misrepresentation.

A purchaser buying by catalogue or sample is entitled to expect good marketable stock, of the kind contracted for or according to the sample, but must inspect the plants delivered promptly upon the receipt of the shipment and either reject the whole shipment if not up to the standard or, if the orders are severable, reject the part not according to contract, or keep the shipment and deduct the damage suffered by reason of the difference in value between those delivered and the value of the plants as it would have been if according to contract.

There is a great difference between making a contract for future delivery of plants that you have not seen or that you have bought by sample or catalogue and the buying of plants that you yourself selected from stock on hand. In the first case in the

absence of express warranty or representation there is an implied warranty that the plants shipped are of the kind and quality contracted for and, within the terms of the contract, good marketable stock of the variety ordered. If you select your own plants there is no implied warranty that they are of good marketable stock or even the kind you wanted. The warranty if existing at all is an express warranty and must be proved as such.

The question is often asked: Suppose after a sale is made for future delivery an attempt is made to cancel the order. Can it be done legally? To this I answer the facts in each case must govern the decision, and you should always consult your attorney if you care to either insist on the order of a nurseryman or reject a shipment, which may be made notwithstanding a cancellation, or insist on a claim for damages by reason of loss of sale.

As a general proposition, an accepted contract of sale, legally made and otherwise valid, cannot be cancelled on the mere whim of either party, however much he may desire to do so, but, as a practical question, it usually costs so much to enforce such a contract, compared with the result obtainable and considering the delay of litigation, that it does not pay to enforce it. A contract can be cancelled or rescinded by reason of fraud in the making of the same, or false representation material thereto and relied upon by either party, by reason of which it was entered into; as, for instance, a positive statement as to the ability of the principal to perform the contract, his financial standing, his being a grower of plants instead of being merely a dealer in the same, or as to the kind or quality or other features of the plants sold.

Another reservation should also be made. If the contract is to be accepted by the principal before it becomes valid—and it must be accepted within a reasonable time—then before such acceptance it is a mere offer and subject to cancellation at the whim of the customer. This provision is very commonly inserted in the order blanks used by agents of large jobbers, where the principal wishes to reserve for himself the right to pass upon the desirability of the sale or the financial responsibility of the customer or for many other reasons.

If the plants delivered are not up to contract grade or kind or not delivered on time, if time is important, the contract can usually be rescinded and is always subject to rescission by the other party if either party refuses to perform. The customer must act promptly and positively. He cannot accept the goods and then

after a few days send them back. He has, however, the right to open the shipment and examine the plants and then reject them if not according to contract. If he fails to reject promptly, his only remedy is to accept the shipment and recoup himself in damages on the ground of breach of warranty.

In this connection it may be worth while to say a word or two about the remedy of the nurseryman in case of unlawful cancellation. Even if the same be unlawfully cancelled, he has no right to make shipment notwithstanding the same, but can sue only for the actual damage suffered by him for the loss of his contract of sale. He is further obliged to reduce the damage as much as possible by trying to sell the plants to other persons, and, of course, if the goods are sold at the contract price he suffers no loss and can only collect nominal damages at the best. If he is obliged to sell for less than the contract price, he is entitled to hold the customer for the difference between the sale price and the contract price. If the plants have no market value, the contract price less the cost of shipment is the measure of damages.

From this you will see that, as a general rule, cancellation of contract even though illegal is usually effective and does not result in punishment to the customer by reason of the slight damages and the cost of recovering them.

Another question often arises in the mind of the nurseryman upon the receipt of an order for plants which he may be out of. It is this: Can I substitute another variety in place of the one ordered? The actual doing so is perhaps one of the sources of the greatest amount of friction between the nurseryman and his customer and may lead to expensive litigation. As a general proposition I answer "no" to the question, with the reservation that if the substituted plants or varieties are accepted by the customer with the knowledge of the substitution he must pay for them as a matter of course.

It may further be asked: Suppose in the catalogue or order sheets there is a printed clause reserving the right to substitute other varieties if out of those ordered. Even then I should say a substitution cannot be made without the express consent of the customer to the particular substitution, except in a very limited degree. If the plants shipped are a substantial performance of the order, so that the difference in grade, variety or plant is not a material one to the customer, then it can probably be made, but each case must depend upon its own facts and circumstances. If

you cannot fill the order as given, the only safe thing to do is to notify the customer and ask him for orders as to the substitution. If without such orders you ship a substituted article, it is a mere offer to the customer to take the plants shipped instead of those ordered, which he is at liberty to reject at his pleasure, and if you cannot carry out the contract as made, or decline to do so, he may rescind or hold you for damages. He is not bound to take what he did not order but must act promptly in rejecting as soon as he becomes informed of the substitution.

I do not know that I can add anything further which will be of direct interest to your body, and I can only say that the questions applying to each particular case are so ramified and interwoven with other questions and legal principles that you can never rely upon any such book of legal lore as "Every Man His Own Lawyer" but must use common sense and honesty, tempered with good judgment and discretion and, perhaps, a little sound legal advice.

HORTICULTURE IN THE FARMERS' INSTITUTE.

REMARKS BY FRANK YAHNKE, WINONA.

You have no idea how hungry the average farmer is for information along the line of horticulture. Almost all of them are interested. You ought to hear the questions they ask, and you ought to see how spellbound they are when we give them this solid instruction in horticulture. They want to know it, and they want to know it all. We sound the praises of this society in every institute meeting. We tell them what the horticultural society has done for the state, how they work, how self-denying the people are, how they are sacrificing time and money to spread this gospel of horticulture. Let us go on with the good work—but I never need to ask you people to go on with the good work, because you are doing it all the time. The people want this information almost everywhere I go—where they do not need it or do not want it they will tell you so, but they need it everywhere, and this is true not only of the people on the farm, but the people in the cities want this information. Almost everybody is interested in horticulture. This is a natural feeling. Fruit was first created for mankind for food, they have inherited that desire for fruit, and nature craves it, and they want all the information they can obtain regarding the growing of it where they are so situated that they can grow it. Therefore I say this horticultural society is an ornament to the state, it is not ornamental alone, but it is ornamental in its usefulness. Let us keep on with the good work, and let us spread the information the people want and need! It is not theory they want, it is the facts. Just to show you how practical the people feel about these matters—

at one of our institutes a man got up and talked about the dairy industry. He told what the cow had done for Minnesota, he told how many creameries and how many cheese factories there are in the state, and what a great future the dairy industry had before it in this state, when a farmer stood up in the audience and said, "Say, Mister, can you tell us how long a cow ought to stand dry?" That was a simple question, but they want to know about those things. They don't care anything about the glittering generalities of any industry, but they want the plain, practical facts that will help them understand the work. If we give them theories they will not do them any good, but they need and want the cold, hard facts. Therefore, I say, let us spread this gospel of horticulture and carry on the good work with our utmost effort. (Applause.)

THE HANDLING AND MARKETING OF APPLES—FROM THE STANDPOINT OF THE GROWER.

E. A. SMITH, LAKE CITY.

The nurserymen are apt to leave the apple tree as soon as it is sold to the customer, but their duties do not really end there. If the farmer has bought 100 or more trees, naturally he will have apples to sell. A market must be provided, and the average farmer being comparatively helpless when he gets outside of work with which he is thoroly familiar, is at a loss to know what to do with his fruit, so it often goes to waste, his profits turn out a loss and he becomes a discouraging element to others.

The apple growers of the United States are placed at a disadvantage in not having any generally recognized or legal standard for packing their apples. Some horticultural societies have presented schedules describing different grades, but they are more in the nature of recommendations than authoritative. One difficulty in establishing a standard grade is that one year the apple crop may be generally inferior, and if the yield is small the apples that would be rated as seconds in a year of abundance would be passed as firsts in a year of scarcity. Canada successfully enforces an arbitrary inspection of fruit, and all fruit exported to foreign countries is not only inspected but must bear the government brand. The result is that Canadian fruit takes a higher rank and brings a higher price than fruit sent from the United States. In substance, the Canadian "Fruit Marks Act" is as follows: The fruit shipped must be uniform throughout and just what it is represented to be, ninety per cent of it, at least, being free from bruises and other defects, and properly packed. It is considered a false representation when more than fifteen per cent of the fruit is inferior in

grade to the description or that which is shown on the surface of the package.

In *planting* an orchard, only the best trees should be purchased, and not too many varieties should be planted for a commercial orchard. The trees should be headed low, as the branches protect the body of the trees from the hot rays of the sun, and it is much easier to pick the fruit. It perhaps is not within the province of this paper to suggest which varieties are the best. In a commercial

E. A. Smith, Lake City.

orchard it is well to have enough of one variety, or of varieties which ripen at the same time, so that, if it seems desirable, the fruit upon the trees in the orchard can be sold in carload lots—150 to 200 barrels being counted as a carload. If the individual orchard is not large enough for this, there may be several other orchards near by, so that an arrangement of this kind may be made to the advantage of all.

Time—The time of picking makes quite a difference in the quality and the keeping of fruits. Generally speaking, the greener the fruit picked, the longer it will keep, but the poorer it will be

in quality. Summer apples and fall varieties ripen well on the trees, but they should be picked as soon as they begin to color and have reached their size, as this class of fruit rapidly becomes soft or water-cored.

Anisim, 5 years old, in orchard of Jewell Nursery Co., Lake City.

Barrels or Boxes—An estimate of the probable number of bushels should be made early in the season and barrels ordered to meet the requirements. Barrels may be procured at most flouring mills or can be purchased direct from the manufacturer. Prices will vary from 28c to 35c according to the quality of the barrel and number ordered. Boxes may also be had holding a bushel—

costing about 12c each. Choice, hand-picked varieties may be placed in these, and they usually bring prices from 15% to 25% above stock packed in barrels, but this form of packing is not as desirable for commission men to handle.

How to Gather—For picking apples, light rung ladders are best. The top of the ladder should be brought to a point like an inverted "V," so that it can be easily pushed between the branches. High step-ladders are also good, but they cannot be pushed among the branches so easily as a ladder. Climbing of trees should be avoided as much as possible, as the bark is liable to be injured and the fruit spurs broken. An impromptu ladder may be made by nailing strong slats on a stout pole of suitable length.

Baskets or Crates—For picking into, a box or basket will do if the fruit is handled carefully. One-half bushel baskets padded with burlap and provided with an "S" shaped hook are the best. Some prefer a grain sack thrown over the shoulder, the top being kept open by a hoop.

When the baskets are emptied, the fruit should be gently slid into the crate or barrel. The best and most convenient kind of a crate is one that will hold a bushel. We make ours of elm slats—four on each side—each slat is two inches wide and one-half inch thick. A cleat is put on each corner to strengthen it and nailed securely with clinched nails. The slats are placed about an inch apart. Size of crate, inside measurement, should be 18x15½x8 in., which makes one bushel. These crates are strong, convenient, cheap and durable. The fruit is carried in these to the fruit house and kept in them until sorted and emptied into barrels. If the fruit is to be taken quite a distance, it should be carried in a spring wagon if possible.

Picking—The picking of the fruit is an important item. The apples should be gathered by slightly twisting the fruit and bending it upward. If pulled off, the stem is likely to be broken or pulled out, or the fruit spur injured so that it will not bear next year.

Many people still believe that winter apples should be piled upon the ground and allowed to sweat a few days before being packed or put into the cellar. This is not necessary though often convenient. Being put in piles, fruit is liable to heat, bruise and decay.

Packing—In packing, leave two layers at each end of the barrel with the stems out. If you wish to secure a good reputation

and a good market for your fruit, have it filled with the same kind of stock throughout and place your name and address on each package. The barrel should have three or four holes cut in the sides for ventilation. Fruit will stand up and keep better when well ventilated.

Poor Fruit—Wind-fall apples may be gathered, carried to the fruit house or shed and there washed by being thrown into a large tub of water and then thoroughly wiped, or they may be wiped dry. Such fruit can be sold at a profit. Another way to use this class of apples is to have a cider press and make the apples into cider or vinegar. For one who has but few apples to make into cider, a press can be purchased costing about \$10.00. Four gallons of cider can usually be pressed from a bushel of crushed apples. Some varieties will yield five gallons, some only two. Good cider can readily be sold at good prices. The pulp can also be washed out, and the seeds, which are a little heavier, will settle. These can be sold to nurserymen at from \$6.00 to \$8.00 per bushel. The idea is to let no fruit or its product go to waste.

Heading—When it comes to heading the barrel, a wooden screw press can be procured at little expense, but if not convenient to buy one, take a two by four scantling, place one end under a studding, let this pass over the head of the barrel on which is placed a block, then bear down at the long end of the scantling and a great pressure will be exerted, so great, in fact, that unless care is exercised the fruit will be crushed and broken. A contrivance of this kind is not recommended but may be used in case of necessity.

Summary.

See that the ladders are in good repair.

Pick the lower limbs first.

See that the ladder is placed on the tree gently, so as not to knock off or bruise the fruit.

Hang the basket so as to be able to pick with both hands.

Lay the apples in, not drop or throw them in.

Don't take too much time in trying to pick poor fruit that is out of reach. Let it go. By and by it will fall on the ground, and it can be quickly gathered then.

In emptying apples, pour them out gently; also set down the crates carefully.

Use a spring wagon in hauling over rough places, and over such places drive slowly.

Pack apples in barrels with the two rows at top and bottom having the stems out, and uniform fruit thruout.

If you cannot find a home sale for the fruit, send it to a reliable commission merchant, a charge of 10% being customary on

less than carload lots. Notify the commission merchant when shipping, and correctly inform him as to quality and variety of fruit sent. Mark each package with what it contains and put your address on it for future reference.

Mr. C. C. Hunter: I did not quite understand the point Mr. Smith brought out in regard to injuring the buds of the next year.

Mr. Smith: Those who have not had experience in picking apples bend down the limb and are apt to break off the fruit bud or spur. When you pick an apple twist it off, and there will be no injury to the fruit spur.

Mr. Emil Sahler: In picking apples I find with every apple a blossom bud. I was at Mr. Yahnke's place this summer, and I remember when they were picking he said they must not pull off those blossom buds. My experience in picking apples is that the best way to do it is to put your thumb up against the stem of the apple and give it one push and the apple will come off, and that will never destroy the blossom bud for next year. It is simple when you get used to it. At the same time when I give that stem a push I have a device to drop it into this little receiving sack. It is handy, and it is just perfect; one man can do the picking of two men. Mr. Yahnke used one in picking cherries, and his son told me he could pick in one hour as much as his father could in a whole day by the old way.

Mr. A. J. Philips (Wis.): That's all right if you do it yourself, but the boys and girls will not do it any better.

Mr. Sahler: Why, the girls do better than the men and boys. They're all right.

Mr. Brackett: In connection with those spurs I want to say that when you are picking the Wealthy break off as many buds as you can, and they will not be so apt to overbear.

The Chairman: That is a good point, only don't get personal with the bootheel.

THE RELATION OF STOCK AND SCION.

A. J. PHILIPS, WEST SALEM, WIS.

I was not going to say much on this subject, although I have talked top-working. I have not top-worked as Mr. Kenney recommends so much as to increase the hardiness of the tree. I know it does it. It increases its longevity, and the stock does have an influence on the scion. There is no question but that in time the result will be that a strong growing variety like the Virginia crab will produce larger fruit than it will on its own roots. A man asked me yesterday whether I ever noticed a difference in the flavor of an apple that was top-worked. I took the precaution after I commenced top-working in the way of corresponding with Prof. Bailey, and he saw some

apples that I had sent to Chicago that were top-worked, and he immediately wrote me a letter asking this question: whether I had noticed any difference in the quality of fruit top-worked, and whether I would send him some specimens of fruit top-worked on the Virginia crab, which I did. I sent him sixteen apples. I sent him two Utter grown on their own roots, two grown on Virginia crab, also two Wealthy and two McMahon on Virginia, and asked him to send me a verdict. He said the Wealthy grown on the Virginia crab was no better than grown on its own roots, and he could see no difference in the Utter, but the McMahon and the Wolf River were much better in quality grown on the Virginia crab than grown on their own roots. The Virginia crab is a good apple to eat, but it is no better than the McMahon, but where the quality of an apple is inferior to the Virginia crab it will improve it to grow it on the Virginia. When I first sent the Shook crab to Prof. Goff he kept it until spring and wrote to me and said it was very fine and asked me why I had not propagated it. I told him it was on account of its size, that nobody wanted an apple like that. He told me if I top-worked it on some thrifty stock I could increase its size, and it would prove a valuable apple. It is valuable anyway, he said, but I could increase its size by top-working. I top-worked it, and this year I had the first fruit. I called it the "Shook" crab because I have to shake it off. That is the result (holding up different sized apples). This is to show the effect of the stock on the fruit. This (indicating) is from the original tree and this is grown on the Virginia crab. You can see the difference in size. This (indicating) is the Gould crab that Mr. Kenney recommends so highly, but I have never tried it for top-working purposes. Unless the stock does have an influence on the scion, I don't know of any reason why the Wealthy is hardier on the Virginia crab and lasts longer and bears longer than it does on its own roots, and the Virginia crab is a stronger grower and gives to the top more life and vigor than if on its own roots. About affinity between the graft and the stock, I believe the variety that makes a union that is not perfect will be the hardiest, because there is an obstruction in the flow of the sap which will cause it to ripen its wood earlier. Where there is a perfect affinity between the stock and the scion and the union is perfect, and you can see whether it is perfect or not, I do not believe it adds any material hardness to the graft.

Mr. Harrison: If you put that apple on a large growing tree, like the Wealthy, Duchess or Hiberna, would it increase its size?

Mr. Philips: No, I don't think it would, because I think the

Virginia is as vigorous as any of them. I dug up two trees of four year old Virginia and two of four year old Wealthy, and the Virginia had almost double the root system of the Wealthy. I think it is the strength and vigor of the stock that does it. I don't think the size has anything to do with it.

Mr. Patten (Iowa): Was that the largest apple on the tree?

Mr. Philips: I think it was. I never knew a case where a man didn't take the largest apple to a show. (Laughter.)

Mr. Patten: Might not a top-worked tree when young produce bigger apples than when it becomes older?

Mr. Philips: Well, that is a good question. A young chap is expected to do more than old fellows like Harrison and I. (Laughter.) Not always, but sometimes anyway.

Mr. Kellogg: State the conditions and the influence of top-working in the Wausau orchard.

Mr. Philips: I stated that the other day. There are varieties there that will do much better top-worked than they will on their own roots.

Mr. Busse: Did you see any difficulty in regard to blight whether they were top-worked on their own roots? I grafted some three years ago, and I would like to know what the results are going to be.

Mr. Philips: We had some varieties that never blighted on the Virginia crab. I put some of those varieties on the Hibernian and changed the blood, which has an influence on the top.

Mr. O. F. Brand: I had considerable experience in top-grafting a good many years ago, beginning in 1868 and 1870, and a good many varieties were top-grafted in 1873. All the varieties top-grafted prior to 1873 winter-killed that winter. That is my recollection. But I did a lot of it in 1873-4-5 on seedling crabs, on seedlings from unknown seeds and seedlings of the Transcendent and Hyslop crabs, and the Wealthy I top-worked on the Siberian crab, that bears this little, long stemmed yellow crab. They did first rate until 1884—the spring of 1884—and in the spring of 1885 they were all dead. I remember picking from one limb of the Utter Red, top-grafted—I have the old tree in sod land—I remember picking in 1882 a bushel and a half of apples from that one limb. That limb was dead in 1885. The tree is not dead. There I had that top-grafted tree worked with Malinda, Hyslop and Transcendent worked with Malinda, and they made a perfect union, but the top and stock were dead in the spring of 1885. That gave me an idea that the graft had an influence upon the stock and certainly weakened it so it killed it. Those other Transcendent and Hyslop crabs that were not top-grafted did not kill that winter.

As to the different varieties being increased in size by top-grafting, I know a great many seedlings are increased to double the size, sometimes more than double, by top-grafting. But there are some varieties that do not seem to be changed at all in size, and one of those is the Malinda. I have got more fruit this year from my Malinda trees than from all the other grafted varieties. We have about

fourteen orchard trees, and nine of those are top-grafted trees. I do not know what the stock is, I don't remember. The root-grafted trees bore just as heavily and just as large apples as the top-grafted trees, which is not the case with other varieties. I believe we have got to try our varieties to see what will be increased in size by top-grafting. We have the Malinda top-worked on the Virginia crab that are apparently hardy, but they scabbed very badly this last summer. The apples were almost worthless. Then we have the Northwestern Greening worked on the Virginia crab, but the trunks of the trees killed on the Virginia stock. I had a Wisconsin seedling, a very fine winter apple, worked on the Virginia crab; I was very proud of it, I would not have taken ten dollars for it, but the trunk killed. The top did not kill, but it was the trunk. So I have found that the Virginia crab is not entirely satisfactory as a stock to work on.

Question: "Does it pay to raise apples in Minnesota, and what variety would be the most profitable to plant?"

Mr. Busse: That is a hard question to answer, because it does pay some people, and it does not pay others. As far as my experience goes I would say it does pay, although a few years ago some people were talking to me and suggesting that I was spending a great deal of time and money out of which I would not get any results. I said the orchard I had had done exceedingly well; in fact, I had been so well satisfied that I was going to plant more trees. I did so, and although we cannot expect to get a great harvest right away, in a year or two or three years, still I feel that the time is coming when they will pay me. It takes some time to develop a good orchard, but if it has the right kind of care it is bound to pay.

Mr. Philips: What varieties pay best?

Mr. Busse: Well, one year is not always like another. Last season I had four varieties that all paid well, the Duchess, Okabena, Patten's Greening and Hiberna. Some people thought it would not pay me for all the time and expense I was putting into the trees, but last year a few trees that I had planted nine years previously paid me for all the time I had ever put on them; they paid the interest on the value of the land and for all the work I had done. I had a great many trees that yielded from five to seven bushels of apples each that were only nine years old.

Mr. Green: How much did you get for them?

Mr. Busse: I got from seventy-five cents to \$1.25 a bushel. Those for which I received seventy-five cents were what I called second class apples. I graded my apples, and some I sold for seventy-five cents, some for \$1.00, and what I called first class apples, those that were good and sound apples and of good flavor, I sold for \$1.25 a bushel.

POINTS IN DAKOTA ORCHARDING.

M. J. DE WOLF, LETCHER, S. D.

We were told when we came to Dakota in 1887 that we could not raise fruit there, and some went so far as to affirm that forests could not be made to grow either. I replied that we had come five hundred miles to Dakota to build us a home and that we were going to try and make the spot we called home as attractive and homelike as possible.

Beginning at first in a small way, while the soil was still too new and the trees one was able at that time to buy not the best nor the varieties well chosen in regard to hardiness, our first efforts in orcharding were not very successful.

M. J. DeWolf, Letcher, S. D., Pres. S. D. State Hort. Society.

At the end of three or four years there were left of the thirty-six trees that comprised the original apple orchard but six, four Hyslop and two Whitney. The choice varieties of large apples planted were all gone.

As I had but four Hyslops in the beginning, this was a good showing for this variety. These continued to grow and flourish until they were large trees, large enough to bear five bushels of

fruit apiece, when the blight made its appearance in the orchard.

The first year these escaped, but the next the trees showed considerable many blighted twigs, but nothing serious however.

The following season (two years ago) the blight was more disastrous, and I was obliged to cut one of the four trees, and the past season another nearly succumbed, but the other two, which stand on the opposite (south) side of the orchard, seem perfectly sound, and only a few of the twigs have blighted as yet. Both trees bore a heavy crop of fruit the past season.

The second season after setting my orchard I enlarged it to one hundred trees, giving especial attention in the selection to what I had learned to be essential—hardiness.

I have made it a rule from the first never to let a spring pass without setting more or less trees, although sometimes this was done at a sacrifice of the necessities of life.

I have now two forest groves, one of twelve and the other of ten acres, both of which are successful and fast growing into large trees. They consist mostly of ash, with a sprinkling of elm, box elder, black walnut, black cherry, soft maple and catalpa for variety.

One of the groves forms the northwest windbreak for one of my orchards, being but four rods away from the north line. The south and east of the same orchard is protected by a close row of red cedars about four rods away.

The space between is reserved for a fire break and is in brome grass at present. I have in orchard 350 apple trees, 450 native plum trees, a few Early Richmond cherry trees, with grapes, currants, gooseberries, black cap and Turner raspberries and strawberries, all of which yield good returns for the labor bestowed upon them.

I set my apple trees in rows thirty feet apart and fifteen feet apart in the rows. My custom has been to make my orchard my garden spot, and I bestow good care on the garden, dressing it with a covering of barnyard manure about once in two years. By giving it my personal care, it not only gives good returns for my labor, but it affords me opportunity and pleasure while doing this work to observe the orchard trees and with my jack knife to keep them pruned and headed aright, and this with little or no loss of time.

If the rows run north and south the closeness of the trees in the row will be quite a protection from the sun. But as a pro-

tection from both sun and rabbits I am in favor of a bundle of millet as the quickest applied and the cheapest. A spry man can apply it to from 300 to 400 trees in a day.

I mulch my apple orchard every fall, and in the spring before plowing I spread the mulch between the rows, where it will be turned under, thus making it answer the double purpose of winter protection and summer fertilizer.

The varieties I have found hardy and non-blighting or nearly so are, viz, Duchess, Patten's Greening, Harry Kaump, October, Wealthy, Malinda, Lou and Iowa Beauty; Florence, Virginia and Martha crabs.

The native plums I plant a trifle closer, about twelve feet apart in the row, and rows about twenty-seven or twenty-eight feet apart. These are cultivated the same as apples and planted to hoed crops. I keep down all sprouts except when on own roots, when I save a few of the choicest for resetting or for sale.

The plums, I find, do not require to be mulched nor protected from sun or rabbits.

View in orchard on farm of Mr. M. J. DeWolf, Letcher, S. D.

My varieties are Forest Garden, Hawkeye, Stoddard, Wolf, Wyant, Rockford and for early, Cheney and Odegard.

Odegard is very much troubled by curculio and pockets some seasons.

The Cheney, while perfect in tree and a large choice fruit, runs so much to pockets that I have not found it profitable.

I have a couple of seedling plums I am very proud of which have only borne one crop as yet. They are fully as large as

Hawkeye and much handsomer in appearance and finer in quality. One ripens about Aug. 15th, the other first week in September.

My Turner raspberries are not covered in winter but are set where protected from the wind sweep by the orchard and windbreak, the ground being mulched along the row. I sometimes lose my canes, once probably out of three or four seasons, but as I am situated it does not pay me to cover.

My strawberries are a part of my garden between the rows in my apple orchard. I use the matted row and cultivate, mulching for winter protection with slough hay—which is free from foul seeds.

I am convinced that for successful fruit growing in our locality a northwest protection is essential in the shape of a strong, close windbreak, as our prevailing winds are from that direction and constant during the coldest part of the winter.

In my early experience, before I had time to grow windbreaks, I set out two rows of Turner raspberries east and west. The second season they came through the winter in a good, healthy condition and bore a large crop of choice berries. The following winter the north row killed to the ground and did not grow a single berry, but the south row with no other protection than that given by the row on the north of it bore quite a few berries and these mostly on the south side of the row.

TWO MINUTE TALKS

AT THE CLOSE OF THE ANNUAL MEETING, 1905.

The Chairman: The moment has come to close this session, and it has been customary to close the meetings in a very delightful manner in the way of making two minute speeches. These speeches are made for the purpose of sending us on our way rejoicing and to fill us with enthusiasm for another year's work that is before us. I am going to call first on Senator Stockwell.

Hon. S. A. Stockwell: When I joined the horticultural society about three years ago I knew about as much about the subject of horticulture as a certain Hebrew I heard of the other day knew about his anatomy. Isaac met a friend on the street and said, "Moses iss awful seek." "So? Vat iss de matter mit Moses?" "Oh, Moses haf got upendesitus." "Upendesitus, vat iss dot?" "Oh, dey are goin' to take hees upendix away from heem." "Ach, Himmel! Vat a beety dot he didn't have it in his vife's name!" (Great laughter.) My knowledge of horticulture was equal to that Hebrew's knowledge, and for that matter it has not gone much beyond that stage, but your proceedings are so elevating that with your

advice and encouragement I am not sure but what by and by I shall become a horticulturist. I may come as near it as a certain saloon-keeper, who had just passed over the great divide, came to asking a man to drink. Unlike most saloonkeepers this man was rather stingy in his treatment of his customers. After he was gone a couple of his former customers were sitting in his place and speaking of his virtues, when Mike said to Pat, "Pat, an did ye iver hear him say, 'Come up to the bar-r and hev a drink?'" Pat said, "O niver did, but—" "Did ye iver hear him say thot?" asked Mike. "Oi niver heerd him say 'come up an hev a drink,' but he came awful near it wan marnin.'" "An' phat did he say?" asked Mike. "Well," said Pat, "Oi wint intil his place, and it wuz a spittin' a little snow that marnin' wid a little sprinklin' of rain, an' he said, 'Pat, phat will it be'—an' before Oi had the chanst to open me hed and say 'whiskey,' he says, 'rain or snow?'" (Great laughter and applause.)

You are so generous with your store of wisdom that one cannot sit through three sessions of the horticultural society without becoming a good horticulturist. I certainly enjoy these meetings, and the inspiration I receive from these gray heads goes with me during the whole year. This is not flattery, it is entirely true. As a city farmer, living in the city, I have in mind during the whole year the gray beards and heads that have done so much along the lines of horticulture in Minnesota. (Applause.) I can remember distinctly as a little child the impression that was made upon me by the talk of my father and mother, who had come from the eastern states. My father was a native of Massachusetts, and my mother was a native of New York. They came here in 1856 and settled on the sand banks of Anoka county, and I recollect that one continual source of disappointment was that they could not raise apples. My venerable father, now 82 years of age, if he were here today could see what has been done along the lines of horticulture. I am sorry it is impossible for him to be here, but I know it would be a source of great joy to him to see the advance made in this state and note the successful efforts made by the veterans of this society.

I simply want to commend two things to you for your consideration as you go away from this place. Two things that are of vital interest to us and, I believe, of vital interest to this state in the future. One of these two things is the question of horticulture. Have the children become acquainted with something besides a smattering of dead languages and ancient history and things of that sort that have no more to do with life than nothing at all. Go into the public school system of our state, insist upon it before the boards of education and before the school authorities of your state that the educational system of the state shall take hold of these vital questions. The other thing is the matter of danger that now confronts the Morris bill. The forest reserve of the state is a thing in which I am deeply interested, as every man who loves his country ought to be interested. (Applause.) A man that would cut off the trees from Copper Island in Cass Lake, a man who would do that would steal the scales off his dead mother's eyes. It is the most beautiful

spot I ever visited in all my life, and yet, my friend, the nature of the lumberman will have to change entirely if it is not accomplished finally, and there is just one way to do it, and that is to make it so hot for the congressmen of this state and other states that we can reach that they will not dare to take a step backward. (Applause.)

The Chairman: I am going to call on Mr. Kellogg, of Wisconsin.

Mr. Geo. J. Kellogg (Wis.): I think I have enjoyed the meetings of this society for over twenty-five years, and I have not missed many of the meetings. It has been an inspiration all of these years, and when I look back to the first horticultural work in Wisconsin, picking huckleberries where Kenosha now stands, and see the wonderful strides that have been made since that time in Wisconsin and Minnesota, it is almost beyond comprehension. What had we then but wild crab apples, thorn apples, butternuts and black walnuts? That was about the extent of our fruit. We had a few wild strawberries, huckleberries and blueberries, but we had none of the larger fruits. I planted the first Rhode Island Greening tree in Wisconsin in Kenosha county. I was a boy about eight years old when I planted that tree, and it grew and flourished for years. The first grafting I did was for my father in a little seedling nursery, and those trees, grafted in 1838, some of them are standing today. We grafted wild crab apples in the woods, and four miles west of us is a wild crab apple that we grafted that is bearing today. When we see the advancement today in horticulture I cannot compare it with any other field better than electricity. I think horticulture is marching right alongside of electricity. I hope to meet you again, and I wish you all the success that you so richly deserve for your enthusiasm and perseverance. (Applause.)

The Chairman: I know we all hope Mr. Kellogg may be spared to meet with us many years; we always enjoy his coming. Now I am going to call upon an Iowa man, Mr. C. F. Gardner.

Mr. C. F. Gardner (Iowa): I will say I have enjoyed myself very much at this meeting of the society, and that I have attended nearly all the sessions for the last fourteen years. It always does me good to come here and again see the faces that I meet here year after year—and to meet many new ones, although I regret to say that some of the old faces are absent that have not been absent at previous meetings and whom we shall probably never greet here again.

The Chairman: Now I am going to call on a man who is one of the best men we have in the society, who is always doing good but never saying anything: that's our old friend John Cummins.

Mr. John Cummins: My father was a Quaker. He was a very quiet man, and I am nearly as quiet.

The Chairman: Well, we heard something from him anyway. Now I am going to give the ladies a chance and am going to call on Mrs. Gibbs.

Mrs. Frank Gibbs: There are so many of the old people here who ought to be heard that it scarcely seems right for me to take the time to say anything. I wish I might have heard Mr. Underwood's paper. If we had known some of the things we heard today six or eight years ago things might have been different.

The Chairman: There are no old people in the house. I am going to call on Mr. Loring from whom we always get good advice.

Mr. C. M. Loring: I will reminisce just a little. I was one of the first members of this society, and when I think of the small number that used to gather in the little halls where we held our meetings and think of the organization of two thousand we have now it seems to me it is one of the most remarkable instances of tremendous growth this Northwest has ever seen. We are the largest horticultural society in the United States, and that is something of which we may all feel very proud. Now, Mr. Chairman, it seems to me each one of us ought to do as the secretary asks us to do, to bring one more member into the association and raise the membership of this society above the two thousand mark. I hope by the time our next meeting is held we shall reach the mark he has set of 2,500 members. I hardly expect we shall get that far, but let us try. What a source of pride it is to me to go back to the east where I was born and raised and say to the people there that we have in this state of Minnesota the largest horticultural society in the world. Many think that Indians are still running wild on the borders of Minneapolis. I know we are all gratified to see the regular and continual growth of our society. (Applause.)

The Chairman: I am going to call on another lady, one who is always found at our meetings, but who rarely has anything to say. I am going to call on Miss Moeser.

Miss Moeser: I can only say that I always enjoy these meetings, and they are an inspiration to any one who attends them. I always take home the ideas I get here and try to put them into practice, and I almost invariably get good results from them.

The Chairman: Now I am going to ask one of our older members to say a few words, Mr. Moore, a man from whom we are always glad to hear.

Mr. O. W. Moore: We have had what I should term a very successful meeting. We have been encouraging one another, we have heard many good things, and while our president was not able to be with us Prof. Green has filled his place admirably, and the meeting has passed off in a perfectly successful manner. There is one thing I am pleased to see, and that is that we have more of the young element with us this time than I think I have noticed at any previous meeting. These are the people we must fall back on; we cannot always lead; and we are depending upon you to follow, which you must before very long. As far as horticulture is concerned in the state of Minnesota the progress of the same is certainly an evidence of the faithful work of the fruit grower. He

has many things to contend with, but he has met these obstacles so far and met them successfully, and it devolves upon you to meet them in the same way in the future, and, as I said before, we depend upon the younger members to help us out. I have been with you and worked with you whenever I have been able to be here and hoped for your success when I have not been here. How many more times I shall be with you is a very uncertain matter. I do not look it, and I do not act it, but on the 13th day of last September I was seventy-five years old, which is nearly the limit of a man's duration in this world. But nevertheless, I am a horticulturist as long as I stay here, and I intend to continue to work in the interests of horticulture as long as I live. I never intend to be or become what you might call an old man. (Applause.)

The Chairman: You are seventy-five years young, not old. I am going to call on a young man. We sometimes hear from his father, but not often, but now we want to hear from Mr. C. H. Andrews.

Mr. C. H. Andrews: I do not know that I can add anything that would be of interest or information. I have enjoyed this meeting very much, and I think I shall try to manage to attend the meetings after this. The fruit display I thought was remarkably fine, and the papers and discussion by the different speakers during the various sessions were an inspiration to every one who was here, and I think this meeting will be an uplift and a benefit to horticulture all along the line.

The Chairman: I am next going to call upon a gentleman whom I know pretty well, Mr. W. S. Higbee, and I know he will respond when I get after him; he used to be one of my students.

Mr. W. S. Higbee: Anybody who knows me knows I am not a speaker. I am a good sponge, and I just sit here and drink it all in. I was thinking while Mr. Moore was talking about the younger element in the society that what induced me to enter the ranks of the society about fifteen years ago was the fact that I realized at the first meeting I attended—and I have attended nearly every meeting since—that very few of the young people were interested in horticulture. This afternoon when some of the members were talking about being discouraged, and especially of what discouragements were met by others outside of our own state, I thought of the conversation that took place between a man who has large interests in fruit ranches in California and myself two years ago. This man stopped at my place—and I always make it a rule when I find a man interested along the same line of work I am interested in to pump him and get all the information I can—and I asked him if he had met with any discouragements in raising fruit in California. He smiled a little and said: "We have everything to contend with in California, insects, diseases," and he enumerated quite a good many things. I said, "You don't know anything about root-killing?" "Well, no," he replied, "but I have seen this occur: After an orchard had been brought up to an age of bearing, just coming into full bloom, I have seen it killed off by a cold

blast, and in one month the fruit of all our labor was gone." That is something worse than we have, and so I think we should think of the discouragements others have and be thankful that ours are not as bad.

The Chairman: It is something nice to know how they are getting along in other places. There is considerable truth in what Mr. Higbee said. Now I am going to call on Mr. Johnson.

Mr. A. A. Johnson: I have only a few words I would like to say. I was induced to become an annual member of this society by a man by the name of Richardson, whom you doubtless all know, and who intended to be present at the meeting, but was prevented on account of weakness and failing health. I have known Mr. Richardson for a long time, and he has always urged me to attend these meetings. I have been wanting to attend for the last seven or eight years, and this year I determined I would come, and I have been so well pleased that I have taken out a life membership. My first impression and the first question that came to my mind was, where are the old boys I met here when I was here a number of years ago? I was a comparatively young man then, and today when I saw the students from the agricultural school sitting in these seats I could scarcely see any of the older men, and I thought this must be a young people's meeting, but after listening to the papers and discussions in which a good many of those young people took part I had to admit that it was way ahead of anything I had heard before. When I saw those pictures over there of the old members I thought of all the good they had done and of the inspiration they had afforded us, and although some of them have gone over the river there are still some of them left, and there are others following in their footsteps that will fill their places, and this work will still go upward and onward and forward. (Applause.)

The Chairman: Those were very inspiring words and we were glad to hear them. Now I am going to call upon our friend without whom a meeting would seem incomplete, Prof. Hansen.

Prof. N. E. Hansen (S. D.): The possibility of one apple! Mr. Elliot gave me this apple I hold in my hand. One seed from that apple may produce the tree that will bear the apple that we want, hardy and in every way desirable, and in a few years every farm home in the state may have an orchard coming from that one seed. That is the possibility of one little apple seed. Near Boston, at Concord, Massachusetts, there is one old grapevine, the original Concord vine, the second generation from the wild. It is protected and surrounded by an iron fence, and from that one vine has been disseminated almost throughout the world the standard grape of this country. So the possibilities of this one seed are something that we cannot realize. (Applause.)

The Chairman: This part of the meeting would not be complete without a few words from Mr. Elliot. Mr. Elliot, let us hear from you.

Mr. Wyman Elliot: I am not going to say good bye, I am here for the campaign. (Applause.) That is what we should all say when we talk about the "boys." I feel just as young as any of the boys, and I tell them I am going to try to be a boy always and get all the fun out of this life possible. Now we have a great many different ways of getting it. My wife says I am a crank, a seedling crank, and I will admit it. I never eat an apple but what I save the seed and tuck it into my pocket. (Prof. Green: You don't let anybody else do it if you can help it.) (Laughter.) At home I have a little tin can containing some damp sand and all the seed goes in there, and when the can is full it goes out into the back yard and is covered up and another can goes in its place. I am in one sense a miser, a seed miser, and I wish there were more of them. My object in getting these apples is to create an interest in seedlings, and if by that method I have been the means of raising one good apple in the state of Minnesota I shall feel well repaid. (Applause.)

The Chairman: Now we are going to hear from Mr. Yahnke. Mr. Yahnke always gives us something to laugh about and to think about, and we'll give him just two minutes to tell us how he feels.

Mr. Frank Yahnke: I am all mixed up; my father was a Frenchman, my mother was a German, Philips is my brother and that makes me a Yahnke. (Great laughter and applause.) When the weather becomes cold I put a heavy hat on my head, and when it gets warm I put on shoes. But to come down to business, the best evergreens I have ever seen are in the western part of Minnesota. A man that is right here now has got the best evergreens in the worst place in the state. When I was out there he told me how he did it. This is Mr. Sievert I am talking about, and there is no use denying it, he can raise evergreens on that dry western prairie, but then he has a secret about it. He plants a hill of potatoes under every tree, then he puts an onion in the hill of potatoes, the onion makes the potatoes' eyes water and that keeps the ground wet. (Great laughter.) I have not said anything because Philips said everything I wanted to say, and I prepared a couple of speeches a year ahead. He comes to my house to visit me and pretends to think a whole lot of me, but he always manages to steal my speeches, and then everybody thinks he is a great fellow. Now I would like to hear Philips make one of my speeches. (Laughter and applause.)

The Chairman: That's pretty hard on Philips, but then Yahnke ought to know. Now we want to hear from the man who grows the evergreens, Mr. Sievert.

Mr. Sievert: I feel a good deal like Mr. Cummins, I am not used to public speaking. I do not see so many people as Mr. Yahnke does, and I am somewhat bashful when I get into a crowd. I want to say that I have learned a great deal since I have attended these meetings. I have taken up fruit growing. That is something I have not done much of, and I need a great deal of information on the subject, but I find this is the very best place to get it. I am

glad I came down here to this meeting. This is my second trip, and I hope to be able to come oftener hereafter. (Applause.)

The Chairman: I am sorry we did not have Mr. Sievert on the program. Now I am going to call on Mr. Philips for a two minute speech, but not a second longer. He hasn't said much at this meeting, but we don't know what he would do if we let him alone.

Mr. A. J. Philips (Wis.): I want to tell you how I happened to come down here. My wife says, "You are not going up there this year." I said, "I feel as well as I ever did." "Well, then go out and bring in an armful of wood," she said. (Laughter.) There is an old gentleman in our county who had an apple at St. Louis that was raised from the Duchess seed. He sent me a dozen up here, and I am going to give them away on the same conditions that Mr. Elliot gave his away. Any one who will take that apple and take the seed out of it will have the seed from a Duchess seedling. This looks as good as the Duchess, and there may be seed enough in these apples to produce something wonderful. I am not going to take any time talking to you today. I was looking up the record this morning, and I found that the first time I attended a meeting of this society was in 1877. I have attended nearly all of them since that time, and I have talked and done a great many things that I thought were good and some that were foolish. I am always glad to come, and I told my wife I was going to attend the Minnesota meetings as long as I could, and as long as Yahnke is across the river to encourage me I am going to call on you as often as I can. There is not much difference between Yahnke and me. I heard a story the other day, and I was mightily afraid the senator was going to tell it. There were two Irishmen that came to this country whom we call Pat and Mike, and they both worked for one man. The man they worked for was a Protestant, and he invited the men to go to church with him one Sunday. Well, they accepted his invitation, and the next Sunday went to church with him. Among other things that took place during the service the choir sang an anthem. The next day while they were at work Mike said, "Pat, an' phat is the difference bechune a hymn and an onthem? Oi can't see ony difference meself." Mike says, "An' shure, there's a moighty big difference. If Oi says to yez, 'Pat, hand me that crowbar,' that is a hymn the way they used to sing 'em, but if Oi say, 'Pat, Pat, pat-pat-pat, hand me, hand-hand, hand me-me-me, hand-me that crow, that crow, crow-crowbar, b-b-bar, bar, bar-barbar crowbar,' thot is an onthem, an' thot is the difference between a hymn and an onthem." (Great laughter.) I want to thank you for your attention and your kindness to me while I have attended your meetings. (Applause.)

The Chairman: I notice we have a lady here who has grown some very fine seedlings, and I am going to call on Miss Cairns, of Wisconsin.

Miss Gertrude M. Cairns (Wis.): I feel as though I was put into the hardest place I was ever put into speaking after Mr. Philips. (Laughter.) I have had the privilege of attending several

meetings here, and I think each succeeding one that I attend is better than the former, and I think the meeting this afternoon was the best I ever attended. It was particularly interesting to me on account of the discussion on seedlings. I think my interest in horticulture and seedlings is hereditary. Mr. Elliot told us of the apple seeds he slipped in his pocket, and at the time of my father's death we found in his pocket quite a number of apple seeds that he had saved. I do not think he ever ate an apple but that he saved the seeds and planted them. They did not always do well, but we have quite a number of his seedlings. I came to this society in the first place with a great deal of timidity, but I have found it one of the best places I ever entered into. I always feel that there is a great deal that is helpful to me here. I feel that if I just came here and looked about the room and saw the inspiration that is evident in the faces of the members I could not help but be interested in horticulture, but for all that I find that some of your members will bear watching. I want to tell you what happened at the last meeting I attended two years ago when I had some seeding apples here on exhibition. I was in the apple room and found Mr. Yankee there getting the fruit ready for Prof. Green to pass upon it. I was not near enough to hear what was said, but I think it was something complimentary from what occurred later. About two minutes later Mr. Yahnke asked me where my seedlings were. I was surprised at the question, but I pointed to a plate and told him those were mine. "Those are not yours, they're mine," he said. (Laughter.) I assured him I could not possibly be mistaken, but he would not be convinced until I referred him to the entry, and some time after he found his plate at the other end of the table. I could not help having a suspicion that mine were a little bit better. (Laughter and applause.)

The Chairman: We have one lady with us who is well posted in the nursery business, Mrs. J. M. Underwood, and we want two minutes from Mrs. Underwood.

Mrs. J. M. Underwood: I think less than two minutes will do me. I have heard so much since I have been attending this meeting and I am so filled with information that I do not believe I can get my wits into shape to say anything intelligently. However, I would like to express my appreciation of the inspiration I have always received in attending these meetings and in witnessing the great enthusiasm displayed. There was a school teacher who attended these meetings for years. I asked her one day why she had so much interest in this question. She said, "I just love to go there, for there is exhibited so much unselfish enthusiasm and interest in humanity in general." I do not know of any other organization in which there are so many unselfish people, and I feel like she did.

The Chairman: I am going to call on another lady, since the ladies are making the best speeches. Dr. Whetstone, we would like to hear a few words from you.

Dr. Mary Whetstone: I am not a fruit grower, but I am certainly very much interested in coming here. Every time I come here

I wish it were possible that I might do something practical in this field. I want to say that you are public benefactors. There is a growing trend of thought and a desire to get near nature, and people are reading with avidity everything that appears in magazines and papers along that line, and so I listened this morning with a great deal of interest to the gentleman who said you could not plant too many apples, they would not be a drug on the market, and thought we could never grow an oversupply of fruit, especially apples. (Applause.)

The Chairman: Now I am going to ask a lady to close this speechmaking. I am going to call on Mrs. Ray, one of our old and valued members whose presence we have welcomed here for many years.

Mrs. J. W. Ray: I am always glad to come to these meetings and profit by them although I am not a farmer. I have a few trees in my back yard. I was about two or three years of age when I first became interested in horticulture, and I remember so well my inquiring about grafting, and they said you cut a piece off a tree and put another piece on it, and it would grow. I had a sunflower and a little apple tree, and I cut off my sunflower and put it on the apple tree, but it did not grow. I have been interested in horticulture ever since. I am glad the society is growing in numbers and in interest. I thank you. (Applause.)

Question: "What is the outlook for apple growing? Is it good or is it discouraging? What do you think of the future of apple growing from a commercial standpoint?"

Mr. Underwood: Until every man, woman and child in the country have all the apples they want to eat I think there is going to be a good market. I am sure everybody likes apples, and I do not suppose that ten per cent of the population get all they want. Of course, when it comes to the matter of growing for market, when we look at it from a commercial standpoint, I believe there is an unlimited field for production.

Question: Prof. Hansen: Here is quite a long question handed me by the secretary, and the questioner wants information regarding the identity of the North Star apple. Mr. Brown, of Eureka, wants to know if they are desirable. Of our North Star apples, the first one Mr. Patten sent out, and the other North Star is a Duchess seedling from Maine, and it is known as Dudley's Winter, named after Mr. Dudley of Maine. I want to say that although this is called a winter apple it is not any better keeper than the Wealthy. I say there are two North Star apples, and I want to make that distinct.

Mr. Elliot: I think there are three North Star apples.

Question: Prof Hansen: Here is a question regarding the propagation of the birch. I might say in reply to this question that the seed is small, we sow it under shade the same as evergreen seed.

WHAT APPLES TO PLANT.

(Parliament Hour.)

Mr. Frank Yahnke: On the 23rd. day of November I read a quotation on apples from Duluth. They were quoted like this: the Ben Davis was first. Why is this apple quoted so high? There was the Ben Davis and the Jonathan on the same line. Then came the Pippin at \$4.50 a barrel; then came the Tallman Sweet at \$4.50, the King \$5, the Greening \$4.50 and the Russet \$4.50. Now what can we learn from these quotations? One thing we can learn is what to plant to be profitable. We cannot grow all the varieties named here, but we can grow most of them, and we have other varieties that are as good or better. Now, how can we do it? We have varieties on the tables below that are equal to them, and some of them are superior to those named. Now, so far as the Ben Davis is concerned we have any amount of apples growing in the state that are far ahead of the Ben Davis. The highest quoted apple, the King, we cannot raise. However, we have apples that are just as good as the King. Then there is the Jonathan, we cannot grow that either, but Mr. Elliot has an apple named the Lord that is fully equal to the Jonathan. Now we have sweet apples on the table that will outsell the Tallman Sweet at any time, and the thing for us to do is to have recognized one or two varieties which are adapted to our markets and give them prominence, and those which are not adapted to our markets we should keep in the background. We have varieties that will compare in every respect with the best varieties sent here from the east.

We have a market right at our doors. We save freight, we save the middleman's expense, and we save the expense of handling them, and we can grow apples just as cheap in Minnesota as they can in New York and even cheaper. In New York they have to fight insects worse than we do here. Apples in New York are a good deal more expensive to grow. They need more expensive treatment—and if we would not pay so much attention to the way New York people do it and more to our own original way we would raise more and better fruit, and we would be more successful in every way. The trouble is we are trying to imitate some other part of the country in raising apples, and I would like to discourage that practice. There are thousands of acres of land on the Mississippi that are lying idle, they are not worth a cent an acre for agricultural purposes. You will find them not only on the Mississippi, but all over the state, even on the prairies, but by judicious handling they may be made to produce great big crops. It is for us to do it. I would like to hear from others on this subject. I would rather speak with you than to you. I would like to hear from any one who has a suggestion to make on this topic.

Mr. O. F. Brand: I think we want to emphasize what Brother Yahnke says about quality in apples and not quantity so far as the apples we originate here are concerned. My attention was

particularly called to this matter last fall by noticing the market reports, and I see that Mr. Yahnke's attention has been called to the same thing. I will read you quotations on apples from the St. Paul dailies of three or four days ago: "King \$5, Ben Davis \$4.25, to \$4.50, Jonathan \$6.50 to \$7.00. You see there is a difference of \$2.50 to \$3 between the Ben Davis and the Jonathan. Now I have been thinking about it for a long time, and I have thought about it more strongly lately, that we have been unable to originate large apples. I have been trying to originate apples of the very best quality. For that reason I at one time got a whole barrel of Jonathan and saved the seed, planted it, and this year I had one tree come into bearing. It produced a medium sized apple, a late keeper, and it was so hard I did not bring it up here, but it will probably keep till May or June, and I expect it has a good flavor. I saved a lot of seed from Brother Merritt's Duchess, and I saved a lot of seed of Duchess that had been brought way down from the St. Lawrence, and this year the trees from those seeds came into bearing, and some of them are red all over, and they have the St. Lawrence flavor which makes it one of the best apples. These are only a few that I planted. I also planted seeds of the Golden Russet, and a good many seedlings grown from the Golden Russet fruited this year, trees that were a cross between the Golden Russet and the Snow apple. There we have the color, flavor, size and keeping qualities between the Snow and Golden Russet. If you will follow along those lines of producing seedlings you will get varieties that are immensely preferable to large apples like the Northwestern Greening.

Mr. Yahnke: I would like to say only a few words along that line. I want to say that with the experience I have had in growing and marketing apples I have found that a large apple is desired, quality alone does not count. The market wants a large, showy apple. I grow a good many Wolf River, and I want to tell you that the Wolf River will outsell in its season any and every apple that happens to be on the market simply because it is large and showy. The Northwestern Greening is a large apple and has a fair quality, but if it is put on the market a red apple will outsell it any time. The effect of the color on the eye has a great deal to do with making an apple marketable. People will go to the store to buy apples, and no matter what the quality may be, if different varieties of apples are placed side by side they will almost invariably buy a red apple. Even a fruit grower would buy that kind of an apple almost every time. The others may be worth twice as much as the red apple, but the color appeals to the eye and sells the apple every time. I believe Mr. Brand is right so far as producing overgrown apples is concerned, but I think a good size in an apple is what we want. An overgrown apple may not be desirable later in the season, but we want a good, medium sized apple, we want it red in color, and if we can put quality in it we shall have the very best fruit we can produce for market purposes. We need not hunt for them

very far and long, we have them already. You can go down into the basement and look over those tables and find what the market wants, in quality, color and size. Has any one else anything to offer on this point?

Mr. Brand: How do the Grimes' Golden compare in color with other apples, and how do they sell?

Mr. Yahnke: It sells for a good high price because it has a golden color. A golden color goes a long way in a great many things. The reputation of an apple has a great deal to do with its sale. The old Rhode Island Greening has a reputation that goes a long way in selling it. The name "Greening" has a great deal to do with it. It makes a good deal of difference whether a man has a good name or a poor one.

Question: How soon will the Patten's Greening bear fruit after planting?"

Mr. Elliot: The Patten's Greening will bear in two or three years after planting, sometimes it is as long as four years after planting, but usually it will bear two or three years after planting. The Northwestern Greening will bear from eight to ten years after planting.

Question: "Is there any difference between the Wealthy and the Peter, and which is the better of the two; which keeps the longest, and how long?"

Mr. Elliot: There is only a very slight difference between the two apples, and there is a difference of opinion among the different growers as to which is the better of the two. Some claim that the Peter is a little hardier tree, but not so prolific as the Wealthy. The fruit is a little more highly colored, but the difference could only be noted by an expert. Mr. Gideon told me the Peter would keep longer than the Wealthy.

Question: "What is the reason our apple trees are loaded with blossoms but do not bear fruit?"

Mr. Elliot: There is the Peerless and the Uranda; the Peerless is an apple that is not adapted to all soils and locations for bearing, but we have a great many instances where the Peerless is a first class bearing apple. Mr. Blair, of St. Charles, has recommended the Peerless as being the best bearing apple he has. There are very few people in our section of the country at Minnetonka that are recommending the Peerless apple. Once in a while there seems to be a location where the tree does remarkably well, but as a usual thing it is a shy bearer. The Uranda I am not acquainted with. There is sometimes a failure to properly fertilize an apple. I could name several varieties that are situated that way, and the better way is instead of planting trees in solid blocks to mix the varieties.

PROF. A. T. ERWIN,
AMES, IA.

The subject of this sketch has recently been appointed associate professor of horticulture at the Iowa State Agricultural College and Experiment Station, with Prof. S. A. Beach, late of New York, as head of the department of horticulture. Prof. Erwin, who is at this time thirty years of age and has had an experience covering practically all of his life either in the practice or the study of horticulture, is especially well fitted for the position to which he is now called. The early years of his life were spent on a fruit and dairy farm in central Missouri. Later he graduated in botany at the Shaw School of Botany, in connection with the botanical gardens at St. Louis, Mo. After his graduation he was for some time under Dr. C. Whitten, at the Missouri State University, spe-

Prof. A. T. Erwin, Horticulturist, Ames, Iowa.

cializing in horticulture. Following this, for a year he was employed by the landscape firm of Fred Omstead & Co. as local superintendent of the planting work being done by that firm at St. Louis. In 1902 Prof. Erwin took a course in post-graduate work under Prof. Craig for Master's Degree in Horticulture at the Iowa State College, and immediately after securing the degree received appointment as assistant in horticulture in that institution. The year following he was elected assistant professor of horticulture. Since the resignation of Prof. H. C. Price, who left about a year ago to become dean of agriculture at the Ohio State University, Prof. Erwin has been acting head of the horticultural department at the Iowa Agricultural College.

Those of our members in attendance at the 1904 annual meeting of our society will recall the presence of Prof. Erwin with us and the thoughtful paper which he presented on that occasion, to be found in the July number of that year's issue.

FRUIT NOTES FROM MINNEISKA.

Four years ago when I purchased my farm I concluded to devote part of our time to berries and orchard. We planted of strawberries the Lovett, Warfield and Parker Earle, from Michigan. The Warfield and Lovett did splendidly, but Parker Earle was not fitted for us. Plants grew vigorous the first season and blossomed well the next season, but got blighted just before ripening, and the berries mostly dried up, and those that got ripe grew so close to the ground that it was impossible to protect them from soiling. Another kind from a neighboring nursery, the Bederwood, was an early and abundant bearer, but the berry on account of its flat base kept the rain too much and fully one-half rotted last year. Corsica, a new berry from New York, was also subject to rot though not as much as Bederwood. Very big size, not so acid as others and drier, not much call from consumers, who don't like the berry one inch across or over.

Of raspberries we have Shaffer, Columbia and Everbearing, all of them bearing very well, only Columbia needs winter protection the most, but they have big, solid, purple berries up to September, and where canes freeze down the shoots coming out in the spring bear the same season.

Of apples we planted different kinds recommended in this state, of which Wealthy, Longfield, Anisim and a few others showed their good will. One Patten's Greening bore abundantly, but apples proved to be very poor keepers. A Bismarck apple, (a remnant of six trees), which it was promised would bear the first year has not blossomed yet.

My apple trees are planted on a north side hill and most of them are healthy looking. The soil is a gravelly loam so exhausted that neither oats nor beans would grow profitably because the good soil is all washed away. Blight has not appeared in this orchard, although some of the trees planted at the foot of this site, where the soil is rich, have blighted badly. It seems to me trees on depleted soil grow slower and are healthier. I believe our northern side hills along the Mississippi river could be converted into valuable orchards, when the shipping facilities are handy or convenient. What can be done on these worthless side hills Mr. Yahnke of Winona has illustrated in practice, since he has an orchard on a side hill which is a great success and a source of good income. His trees look as healthy and thrifty as any I have seen.

HENRY HUSSER,

ESTIMATING DAMAGES FOR INJURED SHADE TREES.

Prof. S. B. Green, St. Anthony Park.

It is quite a difficult matter to determine the value of shade trees. There have been, however, many court decisions rendered on this subject. The amount of damages of course would depend largely upon the size of the trees, their kind and place, and also greatly upon the appreciation of the jury in such matters.

It is customary in Massachusetts where electric lines have to take trees along their right of way for them to pay \$10 to \$15 each for large trees that they remove. But where the trees are especially valuable they have paid from \$200 to \$300 for a single tree. In the case of small trees I presume it would be fair to count the value of the tree and the labor of planting, to which should be added \$1.00 or \$2.00 for each year's growth.

A recent case of award of damages for this kind of injury was had at Kansas City, Mo., where Mrs. Ella S. Betz was awarded \$200 against the Kansas City Telephone Co., whose employes had cut the top out of one of her shade trees. In this case the tree was a fine poplar about six inches in diameter, and it interfered with the stringing of the telephone wires.

A ST. LOUIS IMPROVEMENT PLAN.

The St. Louis improvement league for the past two years has been offering prizes amounting to \$100 in cash for the back yards showing the greatest improvement along the right of way of the Suburban railway. In doing this, the league has had in mind the ultimate making of this right of way one of the picturesque park places in the city. Carrying out this idea, the committee has prepared suggested plans as to how this scheme might be carried out. One of the greatest strides toward securing this parkway will be for the alleys to be narrowed and the fences and sheds supplanted by hedges or trailing vines. In awarding the prizes the view of the contestant's yard from the right of way determined whether he would be entitled to a prize. All the improvements had to be made during the past summer. The league hopes that property owners will become interested in making this section, which is now an eyesore, one of the most beautiful landscapes in this country. In the detailed plan, as suggested by the league, the alley, including the railway right of way, which is at present sixty-four feet wide, the alleys on each side of the car tracks being from twenty to twenty-five feet in width—it is proposed to narrow down to about twelve feet, leaving a grass plot on each side of the car tracks, to be beautified with low shrubbery, flowers and grass.

PROGRAM ANNUAL MEETING,

December 4, 5, 6 and 7, 1906.

ANNOUNCEMENT.

The annual meeting is to occupy the same accommodations in the First Unitarian Church, corner Eighth St. and Mary Place,

Brunswick Hotel, corner of Fourth and Hennepin, has been selected this year as the headquarters of the society and special rates of 50c, 75c and \$1.00 a day, either one or two in a room, have been secured. Rooms, including bath and all in room time. There is a few with this hotel and other restaurants within a few doors on the same street. This hotel is directly opposite the Kasota Block, containing the offices of the society, and five blocks from the place of the meeting.

REDUCED RAILROAD RATES.

Very important.

Each person attending either the Minnesota Forestry Association, the Bee-Keepers' Association or the Minnesota State Horticultural Society should secure a certificate from the railroad agent where the ticket is purchased (not prior to Nov. 30 nor later than Dec. 6) stating that fare has been paid from that point to Minneapolis. Do not fail, also, to get a similar certificate at each railroad transfer point where you may have to purchase a ticket en route.

Since this reduced rate is allowed only from points within the state, any starting from points without the state should purchase tickets to some convenient station just within the Minnesota state line and there purchase tickets to Minneapolis, securing from the railway agent at the time a necessary certificate. This certificate will be signed at the meeting will be upon presentation on Dec. 7 (or within four days thereafter) to the railroad agent in Minneapolis to purchase a return ticket for one-third the regular fare.

These certificates should all be handed to Secretary A. W. Latham, of the Horticultural Society, after reaching the hotel in person on or before the day of the meeting. The agent will be found in attendance in the basement of the church where the society is in session. A fee of 25 cents will be collected by him for each certificate returned.

CLARENCE WEDGE, President.

A. W. LATHAM, Secretary.

207 Kasota Bldg., Minneapolis.

A large fruit exhibit is assured, and we believe the usual proportion of the display will be in seedling fruit from western Wisconsin and South Dakota and Manitoba. Every member should be sure to bring something as a contribution to this fruit display, which ought to exceed one thousand plates, that being the approximate amount of display for the last two or three years. See increased premiums on last two pages of this program.

Look at the program and you will have some idea of the feast in store for you. It contains the names of many experts along various horticultural lines from outside the state as well as much of the best talent in our own state. Don't miss the first session on Tuesday morning nor the last session on Friday afternoon, both of which contain material of extraordinary value. Neither do you want to miss any session that lies between these two, nor the annual banquet of Thursday evening, the crowning event of the meeting.

Reduced railroad rates for you to bring along your friends, who will take advantage of the reduced rates. Neither forget the wife, who will enjoy an outing and meeting of this kind as well or better than you, as her opportunities for getting away from home are perhaps fewer.

All Meetings Will Begin Promptly on Time.

A TEN MINUTE LIMIT.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to ten minutes in their reading, or 1,000 words.

PROGRAM.

TUESDAY MORNING SESSION.

9:45 o'clock.

Every member attending should not fail to be in his seat promptly when this session opens.

Organ Solo

Opening Song...Trafford N. Jayne, Minneapolis.

InvocationRev. C. S. Harrison, York, Neb.

President's Annual Address, Clarence Wedge, Albert Lea.

1. The Farmers' and Gardeners' Unused Capital. An address by Rev. C. S. Harrison, York, Neb.

2. Growing Small Fruits on the Farm. Prof. Thos Shaw, St. Anthony Park

3. A Half Century in the Strawberry Field. Geo. J. Kellogg, Lake Mills, Wis.

4. Four Minnesota Orchards in Fifty Years. Wm. S. Chowen, Minnetonka.

Appointment of Committee on Credentials.

Announce Question Hour.

All annual memberships expire on the first day of the annual meeting. Renew and become a member by paying the Secretary \$1.00.

TUESDAY AFTERNOON SESSION.

1:30 o'clock.

QUESTION HOUR.

Led by A. K. Bush, Minneapolis.

Five questions at Mr. Bush, which he will answer or call on some one in the audience to answer. Discussions on these replies are in order.

2:00 o'clock.

Report of committee on credentials and reception of delegates.

GENERAL SUBJECT: Nursery Topics.

1. How to Grow an Apple Tree, S. D. Richardson, Winnebago City.
2. The Crab Root as a Stock for the Minnesota Orchard, J. Flagstad, Sacred Heart.
3. Winter Grafting, A. O. Hawkins, Excelsior.
4. Educating the Nursery Agent, W. S. Higbee, Eden Prairie.
5. Winter Storage of Trees and Plants, Thos. E. Cashman, Owatonna.
6. The Art of Growing Pedigree Strawberry Plants, Benj. F. Hoyt, Hamline.
7. Growing Hardy Ornamental Trees and Shrubs, E. M. Sherman, Charles City, Ia.
8. Propagating Perennial Flowers, Geo. W. Strand, Taylors Falls.
9. Nursery Propagation of the Peony, John S. in Nursery and Fairmont.

on award of pre-
obituaries and fi-
nal resolutions.

Prof. F. L. Washburn, State Entomologist, will meet the nurserymen of the state at the close of this session to consider with them any subject in connection with the inspection of nurseries.

You can become a life member by payment of \$10.00 in two annual payments of \$5.00 each if you prefer. This will entitle you to a file of our bound reports, a library in itself.

WEDNESDAY MORNING SESSION.

9:30 a.m.

Report of Executive

Wyman
Report of Secretary,

olls, Chairman.

Fourth Cong. Dist., H. J. Baldwin, Northfield
Fifth Cong. Dist., C. C. Dike, White Bear
Sixth Cong. Dist., Henry J.

Seventh Cong. Dist., P.
Eighth Cong. Dist., H. G. Westman, Sandstone
Ninth Cong. Dist., Ole J. Hagen, Hendrum
Reports of Superintendents of Trial Stations.
Prof. S. B. Green, St. Anthony Park.
T. E. Cashman, Owatonna, Dewain Cook, Win-
dom, A. B. Lyman, Excelsior
F. L. Harris, La Crescent. L. R. Moyer, Mon-
tevideo.

Mrs. Jennie Stager, Sauk Rapids.
J. S. Parks, Pleasant Mounds.
F. J. Cowles, West Concord.
F. B. McLeran, Wrenshall. A. H. Reed, Glen-
coe.

1. Interesting the Young in the Home Place and Work.....Henry Husser, Minnieska.
2. Orchard Notes....S. H. Kenney, Waterville.
3. Crossing Fruit Flowers.

Max Pfaender, St. Anthony Park.
Speak of lessons in crossing flowers Wed-
nesday and Friday afternoons.

Notice. A meeting of the members of the Plant Growers' Auxiliary will be held this evening at a place to be announced at this time. Any one may belong to this auxiliary who is a member of the society and is growing seed-
lings.

WEDNESDAY AFTERNOON SESSION.

1:30 to 2 o'clock.

Lesson in cross-pollination, to be given personally to members of the Plant Breeders' Auxiliary and any others interested, by Mr. Max Pfaender, assistant in Horticultural Dept. at State Agri. College. He will be at the president's desk with models, etc., for this purpose.

2 o'clock.

Report of Committee on Fruit List. Prof. S. B. Green, St. Anthony Park; J. P. Andrews, Faribault, Thos. E. Cashman, Owatonna.

Fruit List.

Adoption of Fruit List for 1906.

After the adoption of this list a show of hands may be called for on varieties.

3 o'clock.

Woman's Auxiliary—Joint Session.

President's Greeting.

Miss Emma V. White, Minneapolis.

Secretary's Report.

Mrs. Anna B. Underwood, Lake City.

1. Nature Study for the Child on the Farm.
Mrs. Mary T. Hoverstad, Dennison.

2. Flowers in Manitoba.
Wm. G. Scott, Winnipeg.

3. "As You Like It"
Mrs. Estelle W. Wilcox, White Bear Lake.

4. The Second Season's Work with Children and Flowers.
Mrs. Anna B. Underwood, Lake City.

5. The Dietetic Value of Fruits.
Miss J. L. Sheppard, St. Anthony Park.

Insects Injurious to Horticulture and Their Parasites. Illustrated with lantern slides, Prof. F. L. Washburn, St. Anthony Park.

Annual fee for Woman's Auxiliary, 25 cents, but members of the State Horticultural Society become members upon application to the secretary without further expense.

THURSDAY MORNING SESSION.

9:30 o'clock—Be Prompt.

Announce annual meeting Woman's Auxiliary at 10 o'clock—in the adjoining room.

CALENDAR PROGRAM FOR JULY AND AUGUST.

1. The Apple Orchard in July and August,
R. A. Schutz, Le Roy.
2. The Plum Orchard in July and August,
Dewain Cook, Jeffers.
3. The Cherry Orchard in July and August,
Frank Yahnke, Winona.
4. Small Fruit Garden in July and August,
O. W. Moore, Spring Valley.
5. Vineyard in July and August,
E. G. E. Reel, Excelsior.
6. Vegetable Garden in July and August,
H. J. Baldwin, Northfield.
7. Flower Garden in July and August,
Mrs. S. R. Spates, Wayzata.
8. Practical Results from Spraying,
C. H. True, Sec'y N. E. Iowa Soc, Edge-wood, Ia.
9. Selection of Materials for Spraying,
Prof. Harry Snyder, St. Anthony Park.

Speak of Question Hour this Afternoon.

ONE THOUSAND DOLLARS, is offered as a Premium by this Society for **A SEEDLING APPLE TREE** "as hardy and prolific as the Duchess," with fruit equal to "the Wealthy" in size, quality and appearance, and that will keep as well as the Malinda."

ONE HUNDRED DOLLARS is offered (contributed by Chas. M. Loring) for a Plum Seedling.

ONE HUNDRED DOLLARS is offered annually for five years, beginning 1912, for best Late Winter Seedling Apple.

For particulars as to these premiums address the Secretary.

THURSDAY AFTERNOON SESSION.

1:30 to 1:45 o'clock.

Question Hour. Led by Mr. A. J. Phillips. Ask him questions, and if he can't answer he will find some one in the audience who will.

1:45 o'clock.

Seedling Fruits.

Report of the Committee on Seedling Fruits.
Wyman Elliot, Chairman.
Prof. S. B. Green, St. Anthony Park.
O. M. Lord, Minnesota City.

Report of Committee on Awards on Seedling Apples, with display of those sorts receiving highest awards, by the chairman of the committee.

In Memoriam,S. M. Owen, Minneapolis.

2:45 o'clock.

Annual Election of Officers.

3:00 o'clock.

Minnesota State Forestry Association—Joint Session.

President's Annual Greeting,
Chas. M. Loring, Minneapolis.

1. Preservation of our Forest Wealth.
Hon. B. F. Nelson, Minneapolis.
2. Game Preservation in Minnesota Forests.
Judge W. B. Douglas, St. Paul.
3. Importance of Forestry to the State.
Pres. Cyrus Northrop, State University.
4. An address by a member of the U. S. Forest Service, Washington, D. C.
5. Needed Forestry Legislation.
Prof. Sam'l. B. Green, State Agri. College.

Business session and annual election of officers of Forestry Association.

5:00 o'clock.

The German Orchard—Illustrated with lantern slidesProf. Harry A. Huston, Chicago.

THURSDAY EVENING.

6:30 o'clock.

Annual Society Banquet**"WE DINE TOGETHER"****The regular thing.****Will you be there?**

Some sense and considerable non-sense with a good dinner thrown in

Those attending will go in a body direct from the adjournment of the Thursday afternoon session.

Tickets can be procured of the secretary at \$1.00 each.

Secure a new member in 1907, and receive one of the valuable and practical works on Horticulture given by the society as a premium. For list see "Society Folder."

MEMBERSHIP IN 1906.

2019 Annual Members. . 147 Life Members.
Total Membership, 2166.

FRIDAY MORNING SESSION.

9:30 o'clock—Be prompt.

MANY GOOD THINGS.

1. A Successful Home Storage for Fruits and Vegetables,F. B. McLeran, Wrenshall.
2. Growing Garden Products for Canning Purposes,John S. Hughes, Minneapolis.

3. My Commercial Orchard,
J. F. Benjamin, Hutchinson.

4. What Killed Hardy Stock Last Winter?
E. A. Smith, Lake City.

5. The Exhibition of Fruits.
W. L. Parker, Farmington.

6. The Cabbage Industry in S. E. Wisconsin.
W. J. Moyle, Union Grove, Wis.

7. Storage of Orchard Fruits, an address by
Prof. J. C. Blair, State Agri. College, Urbana, Ill.

8. Horticultural Notes
J. R. Cummins, Eden Prairie.
Report of Committee on President's Address.

Announce demonstration in cross-fertilization at beginning of afternoon session.

Are you a member of the Plant Breeders' Auxiliary? If you are growing seedlings and are a member of the Horticultural Society you should join at once. No expense. Consult the secretary.

FRIDAY AFTERNOON SESSION.

1:30—2 o'clock.

Personal instruction in Cross-Pollination, the art of crossing flowers, by Mr. Max Pfaender, using models. At President's desk. Don't miss it.

2:00 o'clock.

Of Greatest Interest. Plant Breeders' Auxiliary. Are you wearing the badge button?

1. President's Address,
J. M. Underwood, Lake City.

2. Report of Secretary,
Clarence Wedge, Albert Lea.

3. Breeding for Hardiness,
Prof. Andrew Boss, St. Anthony Park.

4. Can We Breed Hardiness in our Trees and Plants.
Chas. G. Patten, Charles City, Ia.

5. Early Maturity and Hardiness in Trees.
Prof. R. A. Emerson, State Agri. College, Lincoln, Neb.

6. Plant Breeding at the State Experiment
Prof. S. B. Green, St. Anthony Park.

4:00 P. M.

President of Horticultural Society in chair:
Report of committee on obituaries and final resolutions.

Two-minute speeches by members.

Song by Trafford N. Jayne, Minneapolis.

4:30 P. M.

Closing Remarks by the President, Adjournment.

OUR STANDARD FOR 1907.
2500 MEMBERS!

Will you send us one of these?

Minnesota Bee Keepers' Association.

Program of the eighteenth annual meeting of the Minnesota Bee-Keepers' Association, to be held in Minneapolis, Minn., Wednesday, Thursday and Friday, December 5, 6 and 7, 1906. Sessions to be held in the First Unitarian Church, Cor. 8th St. and Mary Place. Go in on Mary Place side.

President, Dr. L. D. Leonard.

Sec. Rev. C. D. Blaker, Richfield.

WEDNESDAY FORENOON SESSION.

9:30 o'clock.

Invocation, J. Kimball, Duluth.

Song, Levi Longfellow, Minneapolis.

Reading of the minutes, Report of executive committee.

"Bee-Keeping in Minnesota in the Early Days."

W. K. Bates, Stockton.

"Honey Plants near Yankton, S. D."

J. J. Duffack.

A readingWarner Scott.

"Value of Bee-Keeping to the General Farmer,"
H. V. Poore, Bird Island.

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

Song,Ethel Helen Acklin.

President's Address,Dr. L. D. Leonard.

Bee Inspector's Report,

Wm. Russell.

"Bee-Keeping in Montana,"

H. Barr, Park City, Mont.

Vocal Solo, "Changeless,"

Miss Jennie Evelyn Langdon.

"How I Manage Bees in the Production of Comb Honey."Scott LaMont, Jarretts.

Recitation,Master Norman Mondeng.

Piano Solo, "The Lion Hunt."

Miss Jennie Evelyn Langdon.

Question Box.

THURSDAY MORNING SESSION.

9:30 o'clock.
 Song, Miss Doll.
 "Joining the Horticulturists in a Body.

Song,
 "Economy of Work in the

G. H.
 "A Beginner's Experience with Caucasian Bees," J. E. Stryker, St. Paul.
 Recitation, Miss Viola Pauline Mondeng
 Question Box.

THURSDAY AFTERNOON SESSION

1:30 o'clock.
 Vocal Solo, Miss Anna Parr.
 Address, Prof. A. W. Rankin.
 "Something about the Honey Exhibit at the Winona Fair," Mrs. F. V. Berthe, Winona.

Recitation Ethel Helen Acklin.
 Address Dr. E. K. Jaques, Robbinsdale
 "Bees in Northern Iowa," Mrs. E. L. Minor, Milford.
 Piano Solo, Miss Gladys Clendenen.
 "Reminiscences of Beekeeping," L. E. Day, Clinton Falls.
 "Bee-Keeping in Spokane, Wash." J. A. Yeomans.
 Question Box.

FRIDAY MORNING SESSION.

9:30 o'clock.
 Song, W. S. Wingate.
 "Selling Honey at Home," Mrs. W. W. Lee, St. Paul City.

Piano Duet,
 Misses Charlotte Rankin and Mary Palmer.
 Address, J. P. West, Hastings.
 Recitation, A. J. Whiteside
 Election of Officers.
 Question Box.
 Adjournment.

Mr. Emerson Taylor Abbott, editor of "The Modern Farmer," may deliver an address Friday afternoon, but it cannot yet be certainly announced.

Bee-Keepers are requested to bring small samples of the different varieties of honey.
 The piano we are using comes from the warerooms of the Metropolitan Music Co., 41-43 South 6th St.

PREMIUM LIST, HORTICULTURAL SOCIETY.

All exhibits must be entered with the secretary and in place by noon of the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society and growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied.

Perfect in effect, the standing of the exhibit. N
 The exhibitor's table, in the display, in the standing of the exhibit. N
 The exhibitor's table, in the display, in the standing of the exhibit. N

GRAPES.

Collection 1st. 2d. 3d.
 Prem. Prem. Prem.

Collection \$5.00 \$4.00 \$3.00
 APPLS.

Collection, not to exceed 10 \$6.00 \$4.00 \$3.00
 varieties

Each variety of apples included in the 1916 fruit list of the society, or in the 1906 premium list of the Minnesota State Fair (kept in cold storage)50 .25 .10

Each variety of apples, etc., as above, (not kept in cold storage)50 .25 .10

N. B. For first premiums of the following see S in next page.

Peck \$3.00 \$2.00
 fruit exhibited to be at the disposal of the meeting.

Peck of Patten's Greening (same conditions as for peck of Wealthy) 3.00 2.00

Peck of Northwestern Greening (same conditions as for peck of Wealthy) 4.00 3.00 2.00

CANNED PLUMS.
 Recipe for canning plums (not preserves) with sample pint canned by such recipe, both to become the property of the society. Give the name of variety canned.

First premium, \$10.00; 2d, \$8.00; 3d, \$6.00; 4th, \$4.00; 5th, \$2.00.

HORTICULTURAL SOCIETY.**PREMIUM LIST—Continued.**

SEEDLING APPLES.
 Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

Premiums will be divided pro rata among all entries commended by the judges according to the comparative merit of each as a commercial fruit.

Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

EARLY WINTER SEEDLING—The fruit shown must not have been kept in cold storage. A concise history and description of the tree and its fruits must accompany each entry. Premium \$40.00

LATE WINTER SEEDLINGS—Same conditions as for early winter seedling except that ten specimens must be furnished and if found necessary the fruit shown may be retained and final decision reserved till later in the winter. Premium \$75.00

SPECIAL PREMIUM OFFERS.

Best early winter seedling not heretofore awarded a prize by this society, fifty apple trees, 3 yrs., 5-6 ft., choice, from stock on hand. Offered by Lake City.

Best not heretofore awarded society, fifty apple trees, 3 yrs., 5-6 ft., choice from stock on hand. Offered by Jewell Nursery Co., Lake City.

Best 1/4 peck late winter seedling apple, to be retained for future testing; 25 Carrie gooseberries to be delivered fall of 1907. Offered by Wymann Elliot and Thos. Redpath.

Best peck of Wealthy apples.

Best peck of Patten's Greening
 For each of the two next above 25 apple trees 3 yrs., 5-6 ft., of Longfield, Striped Anis, Peerless, Repka Malenka, Yellow Sweet, Cross, No. 413, Striped Winter, offered by Andrews Nursery, Faribault.

PLEASE REGISTER.

Each person in attendance at the meeting is earnestly requested to sign the Register to be found on the table in the entrance hall.

Secretary's Corner.

DELEGATE FROM THE IOWA SOCIETY.—Mr. Eugene Secor, of Forest City, Iowa, is to represent the Iowa State Society at our annual meeting. As he has been with us before and many of us have the pleasure of a personal acquaintance, it will be doubly agreeable to have him with us. Mr. Secor is a member of the board of directors of that society.

DELEGATE TO NORTHEASTERN IOWA HORTICULTURAL MEETING.—Mr. A. W. Massee, of Albert Lea, will attend the coming annual meeting of the Northeastern Iowa Horticultural Society as the representative of our society. The meeting is to be held at Charles City, Iowa, at a date yet to be announced. Heretofore they have been meeting the third week in December, but a change of date is probable. Mr. Massee is president of the Southern Minnesota society. (Changed to Nov. 20, 21 and 22.)

ANNUAL MEETING OPENS 9:45, TUESDAY, DEC. 4TH—and that ought to see every member who can possibly attend in his seat when the gavel announces the moment of opening, which will be 9:45 *and not 9:46*, as some might think. Promptness is one of the virtues of the horticulturist. Will you be there and on time? There will be some hundreds of people in the hall when the meeting opens, we believe, and we want it to include every earnest and interested member of the society.

DELEGATE FROM THE SOUTH DAKOTA SOCIETY.—Mr. N. O. P. Synoground, of Groton, S. D., president of the South Dakota horticultural society, is to represent that association at our coming annual meeting. We regret very much that Prof. Hansen, Sec'y. of the S. D. society, will not be with us on that occasion, as he has been now for so many years. His stay in Europe is being prolonged, and no one whom we can reach seems to be in a position to tell us when he will return.

STUDY THE PROGRAM.—It will pay you well to do this. If you can't be present at all of the sessions, you will know then what topics you want to hear and what particular features you can least do without. But we believe that its study will do more than that, in showing you the necessity of being present at every session of the meeting. The constant play of thought and variety of topics from session to session will prevent any tiresome sameness. Variety and spice is the order of the annual lay-out.

FIGHTING PEAR BLIGHT.—Prof. M. B. Waite, the expert of the Department of Agriculture on pear blight, we understand, is organizing a special force of five to seven trained officials of the department to spend some time in California this winter studying and experimenting with pear blight. As with us this means "apple" blight, we are certainly equally interested with the California fruit growers as to the results of these researches, which will be reported upon from time to time as they come to our notice.

HELP OUT THE FRUIT SHOW.—This means at the annual meeting. We believe there will be the biggest display this year ever made, notwithstanding the comparatively poor apple crop this season. Bring something—whatever you have saved for this purpose or may have on hand—especially if there are any seedlings on your place or in your neighborhood, be sure and get them out to the meeting. There are lots of fairly good seedlings in the state yet that have never been shown at the annual meeting, we are sure.

BRING YOUR NEIGHBORS TO THE MEETING.—Of course you are planning to attend the annual meeting of the society this year and bring the good wife also. Why not give your neighbors and friends the opportunity to enjoy the same treat? They can come for one and one-third fare for the round trip and take advantage of the special hotel rates at the Burnswick if they want to stay there. There is surely something in our program that will interest every one. It is a very comprehensive one, covering a large field. Show your program to your neighbors or give it away where it will do good, as you already have a copy in this number of the Horticulturist and can get another at the meeting.

MAKING THE WEALTHY APPLE STEM TOUGHER.—Question: Is there any fertilizer that can be applied to the soil in the Wealthy orchard that would likely result in making the Wealthy apple adhere more strongly to the tree, its weakness in this direction being a serious fault? Answer: "I believe that an application of the potash fertilizer would prove valuable in imparting greater toughness to the Wealthy apple tree. Of course this could be told only through actual trials. In case any of your members desire to experiment along this line, it is possible that our station may have some fertilizer to distribute next spring." Harry Snyder, professor of chemistry, State Agricultural College, St. Anthony Park.

WHAT IS THE "MINNETONKA" APPLE?—A recent letter from C. W. Gurney, of the Yankton, South Dakota, Nursery, says "I see that some of the Minnesota nurserymen are advertising the Minnetonka apple. I have corresponded with some of them and find they heard of it through L. L. May & Co. and got the stock from trees of this variety or pretended variety that they have sent out. Some years ago I did the same thing and after a few years my Minnetonka turned out to be Longfield. If there is such an apple it should be taken up and discussed by your society, and if there is not it should be so stated in your reports. Prof. Hansen writes me that there is no apple of that name, and I feel sure he is right." Is there such an apple?

A HORTICULTURAL PARLOR AT THE BURNSWICK.—A commodious parlor has been engaged in the Burnswick Hotel, the headquarters of the society this year. It is at the head of the first flight of stairs and directly adjoining the elevator. You will see a sign on the door which says "Welcome, Horticulturist" That means you. On the center table will be found suitable horticultural literature and plenty of comfortable chairs will be about the room, making this a welcome place for such hours as you are at the hotel and not otherwise engaged. The room overflows into the spacious hall and hotel parlor adjoining, which are well seated also. It will be open on Monday evening, Dec. 31, and thereafter until Saturday morning, and we hope you will use it to the utmost.

JOURNAL OF
Annual Meeting,
Minnesota State Horticultural Society,
DECEMBER 5-8, 1905.

TUESDAY MORNING SESSION.

In the absence of the president, Mr. Clarence Wedge, the thirty-ninth annual meeting was called to order by Prof. Samuel B. Green, in the auditorium of the First Unitarian church, Minneapolis, at ten o'clock in the morning.

An opening song was rendered by Miss Yreda Mulkowski, and the invocation was offered by Rev. C. S. Harrison, of York, Neb.

The Chairman: It is very much to be regretted that our president is unable to be with us this morning, but we expect him to be here tomorrow. The first number on the program is the president's address, which I have been asked to read to you in the absence of President Wedge.

Prof. Green then read the "President's Address," by Mr. Clarence Wedge, of Albert Lea. (See index.)

The Chairman: This is the address of Mr. Wedge, the president of the society. I do not think there will be time to discuss the recommendations made in the address, unless there are some very short remarks that some one might wish to make, but in the regular course of business the address will be referred to a committee on the president's address, as has always been customary.

The general subject this morning is that of "Small Fruits," and the first number deals with the farmer's strawberry bed, by Mr. Cashman.

Mr. M. R. Cashman, of Owatonna, then read a paper on the subject of "The Farmer's Strawberry Bed." (See index.)

The Chairman: The next paper is right along this same line, treating of the cultivation of the strawberry in a certain section of the state, and I will call upon Mr. Westman to read his paper before we take up the discussion.

Mr. H. G. Westman, of Sandstone, presented a paper entitled "Strawberry Culture in the Pine Regions of Minnesota." (See index.)

Discussion.

Prof. N. E. Hansen, of Brookings, S. D., then addressed the society on the subject of "Breeding Hardy Strawberries and

Raspberries." (See index.)

Discussion.

The Chairman: I think we have given this subject about all the time we can spare, and I will now call for the paper by Mr. Haggard, who will speak about the commercial growing of raspberries.

Mr. Henry Haggard, of Excelsior, then read a paper on the subject of "The Commercial Raspberry Field." (See index.)

The Chairman: The next number on the program is a paper by Mr. Geo. S. Grimes, and in this he takes up the subject of blackberry culture in a small garden.

Mr. Geo. S. Grimes, Minneapolis, then spoke briefly on the subject of "Blackberries and Other Fruits in the Suburban Garden." (See index.)

Discussion.

The chairman then announced the following committees:

Credentials.—C. E. Older, R. A. Wright, Preston McCulley.

President's Address.—Dewain Cook, W. L. Taylor, Le Roy Cady.

Obituaries.—L. R. Moyer, O. F. Brand, A. K. Bush.

Final Resolutions.—T. T. Bacheller, M. R. Cashman, H. Haggard.

Award of Premiums:

Flowers.—Mrs. Jennie Stager.

Grapes.—A. Brackett.

Cold storage apples.—G. W. Strand.

Apples, not cold storage.—J. P. Andrews.

Apple collections.—Chas. F. Gardner.

Pecks of Apples.—Thos. E. Cashman.

Seedling Apples.—Wyman Elliot, Prof. N. E. Hansen.

The Chairman: There is a resolution relative to an amendment to the state constitution asked for by the market gardeners regarding the selling of their produce in the cities, that was to be brought before society. Is there any one here to present that resolution?

Hon. S. A. Stockwell: I have that resolution and will present it now if it is in order.

The Chairman: You can present it at this time.

Mr. Stockwell then submitted the following resolution and moved its adoption:

Whereas, the market gardeners and farmers of Minnesota are prevented from peddling their produce in the larger cities, owing to unjust laws that have been enacted, largely through the influence of retailers of garden produce, and

Whereas, the right to peddle their produce has been a privilege that has been enjoyed by the market gardeners and farmers of the state of Minnesota ever since the state was settled, and it is a privilege that should inhere in them for their interests and for the interests of the consumers, and

Whereas, we believe that any combination of retailers which strives to prevent the market gardeners and farmers from peddling their produce in various cities is an illegal combination in restraint of trade, therefore be it

Resolved, by the Minnesota State Horticultural Society, in convention assembled,

First, that we are opposed to all laws which prevent producers from peddling their produce.

Second, that we heartily approve the amendment to the state constitution, passed by the last state legislature, the purpose of which is to permit market gardeners and farmers to peddle their produce if they so desire, and we hope the amendment may pass when submitted to the people.

The Chairman: The matter is now before you. Is there anything to be said on the subject? It is a very vital matter to market gardeners. This matter was discussed very thoroughly at the last session of the legislature, and the legislature passed an amendment to the constitution which will be submitted to the people at the next election. It was found out of the question to pass any law that would effectually remedy this trouble, so it has been undertaken by means of an amendment to the constitution of the state.

Mr. Stockwell: This resolution ought to be passed unanimously, and then not only every member of this society, but every honest, single hearted man in this state, ought to do everything he can to secure the passage of this amendment. It is about time that the inalienable right of man to sell what he produces was made secure in the cities of St. Paul, Minneapolis and Duluth. A handful of grocers get together and proceed to abridge the right of a citizen to do with his own what he pleases, and we ought to do everything we can in the interest of fair play to secure the passage of this amendment. (Applause.)

The Chairman: The chair knows of a small town in Minnesota where they have provided a penalty for selling meat. I think the fine is \$10 a day, and the chairman of the town board that passed the thing was a butcher and practically controlled the situation. We want to fix it so that kind of thing will not hold at all.

The motion, properly seconded, was then put to a vote and prevailed unanimously.

On motion of Mr. Taylor the meeting adjourned until 1:30 o'clock in the afternoon.

TUESDAY AFTERNOON SESSION.

The meeting was called to order at 1:30 P. M. by the chairman, Prof. S. B. Green.

The first number on the program was "Free Parliament Hour," led by Mr. A. K. Bush. (See index.)

The Chairman: If that is all there is on this subject we will call on the committee on credentials to report.

Mr. C. E. Older, chairman of the committee on credentials, submitted a report showing the following gentlemen present with proper credentials as delegates from state and auxiliary organizations: Wisconsin, Geo. J. Kellogg; Iowa, C. F. Gardner; South Dakota, M. J. DeWolf, Geo. H. Whiting, Prof. N. E. Hansen; Nebraska, Rev. C. E. Harrison; Kandiyohi Auxiliary, John Wicklund; Western Canada, Wm. G. Scott, Winnipeg.

The Chairman: At this time I shall take pleasure in introducing to the society the delegates and visitors who have been referred to in the report of the committee on credentials. I shall call upon them to appear before the society so we may know what they look like, and we shall ask them for a few words of greeting. I will first call upon Mr. Chas. F. Gardner, of Iowa, who is usually present at our meetings, and whom we are always very glad to welcome.

Mr. C. F. Gardner (Iowa): Mr. President, Ladies and Gentlemen: It always does me good to come up here and meet with the Minnesota horticulturists. I first commenced attending these meetings the year the society met at Lake City. I have attended every meeting since with the exception of two, when I was absent from this part of the country, being in New Mexico. I could not get up here very well at that time. I was somewhat amused when I was on my way up here from Iowa yesterday. I met a gentleman on the train who lives here in Minneapolis. In some way he found out that I was interested in the nursery business. He wanted to know why evergreens could not be grown in Minneapolis. I said to him: "I can show you as nice evergreens as you ever saw in your life right in Minneapolis." He said he would like to know where they were. I told him of some five or six places, and I spoke to him about the agricultural school between here and St. Paul, and I told him he ought to see Prof. Green's grounds and see if it didn't look as though evergreens grew here. I then asked him if he ever attended a meeting of the Minnesota horticultural society. He said he had not, and I told him I wanted him to attend this meeting, and he would learn a whole lot that he didn't know before. That man lives right here in Minneapolis. He did know there was such a society as this, but he never attended any of the meetings. I told him he had better come over to the First Unitarian Church, go down in the basement and see what those people are doing, and I hope that man will come here and have his eyes opened. I could talk four or five hours on some of these subjects when I get started, but I will only say I am glad to be here and know I shall enjoy the meeting.

The Chairman: We are always glad to hear from our friend Gardner. Now, next I want to call on Mr. Wicklund. Mr. Wicklund is from this state and represents the Willmar Horticultural Society, which is an auxiliary of this society.

Mr. John Wicklund: Mr. President and Gentlemen: I feel very happy to be here today. It is the first time I have ever at-

tended any of these meetings, but I can say, with the gentleman who has just spoken, that I have belonged to the society for a good many years, but never attended any of the meetings. I have learned a good many things from this society. I receive the reports and read them year after year. Those reports are filled with the experiences of members, and I have learned a great many things by reading those reports. I am following this business only in a small way, I have a small orchard, but I am very well satisfied with what I am getting out of it. We have organized a local society in Kandiyohi county, and I was elected delegate by that society to this meeting. Our report was sent to Secretary Latham, so I suppose it will be published, and it will not be necessary for me to say anything further along that line. As I say, we have organized a local society, and it looks as though we were going to make a success of it. I shall try to learn from the older members who have been engaged in the business for many years how they best succeed in the growing of small fruits and apples. I do not wish to take up any more of your time, and I wish to thank you for your kindness.

The Chairman: Over across the border from the United States—and you don't see any border line up there, it looks just like Minnesota—they have a lot of wideawake people, and they have offered us many inducements to come across that border and have taken away a good many of our Minnesota people. They have an excellent horticultural society there, and one member, Mr. Wm. G. Scott, has kept close watch of us, and whenever any of us have strayed up there he has taken us in and given us the best care, and I am one of them. It gives me great pleasure to call upon Mr. Scott to speak a word of greeting for the great country north of us.

Mr. Wm. G. Scott (Winnipeg): I wish to thank you, Mr. Chairman, for the kind words of greeting you have just expressed. I do not want to boast in view of your large membership. While we concede you that large membership, we do not want you to lose sight of the fact that we cover so much territory that we are scarcely able to find it. Our society is not large, about 150 members, but we are pioneers in the work. We are proceeding along the same line with yourselves, and while we cannot hope to show the results for a good many years that you show I want you to get over the idea that we are frozen up a good many months during the year. In October this year when we were picking our apples and gathering fresh flower blossoms, we read about your blizzard, and ten days ago when you had that terrific blizzard of snow I was at my place covering my strawberry bed. I do not want you to think that we are in a land of everlasting snow. We are not, by any means. I do not wish to take up any more of your time. I could tell you some of the experiences of our fruit growers and many other things that might be of interest to you, but I only wish to thank you for the kind reception you have given me. While

we have a very good society up there, we do not expect to outnumber you, at least not as long as you have your able secretary.

The Chairman: It is no wonder they draw the Minnesota and Iowa people over there. We do not wonder at it. The next delegate is Rev. C. S. Harrison, of Nebraska, who is with us this year for the third or fourth time. I think, however, he went over to the school of agriculture to speak, and I doubt whether he has returned. I want to call upon Mr. Geo. J. Kellogg: he is an old personal friend of mine and has been attending the meetings of this society for years. We would hardly feel as though we had a society if we did not have him with us.

Mr. Geo. J. Kellogg (Wis.): I wanted you to hear from me this morning on the strawberry question, but you did not have your question box ready. I was on my way to the coast, but your secretary kidnaped me and held me over. After I saw the program, I could not help staying. It is so chock full that there is hardly a chance for an outsider to get in a word edgewise. Perhaps I shall use more time than I am entitled to, but I want to give you the greetings from Wisconsin. We expected to have our other delegate, Prof. Sandsten, with us this morning, and also our friend Philips, whom you all know, and I presume they will be along later. I could not get by without stopping over. I had forgotten about the convention until Philips wrote me last week and said he would be here Monday night. I had a little experience in overhauling the Wausau orchard of ten acres and writing up its records, and if there is a chance for a five minute paper anywhere on the program I will describe that orchard to you. It lies about east of Lake City, and is of a good deal of interest to you Minnesota people. We have eighty-one varieties there: a good many of them are good, and a good many are good for nothing. This is all I have to say at this time, but you are going to hear from me later.

The Chairman: We are glad to hear from Mr. Kellogg, and we hope he and the rest of you will take part in the discussions just the same as though you were at home.

We have with us several delegates from South Dakota, on whom I am going to call. The first is Mr. DeWolf, the president of the South Dakota society. I want Mr. DeWolf to come forward and let us see what he looks like.

Mr. M. J. DeWolf (S. D.): This is the first time that I have met with your society, but I am glad to be here. I was very much interested in the proceedings I heard from ten until noon this morning, and I presume the rest of the sessions will be of equal interest and value. I am not much of a public speaker, and I trust you will excuse me if I say nothing more at this time.

The Chairman: We are glad to hear from Mr. DeWolf.

Nurserymen are always good talkers, that is the reason they are business men, and if they talk we get a speech. Now we are going to get a speech from the next South Dakota man, Mr. Whiting.

Mr. Geo. H. Whiting (S. D.): The first thing I have to do is to take issue with Prof. Green's statement that all nurserymen are talkers. They talk on paper usually. I am very glad to be with you. I am always glad to meet Minnesota people. I spent the happiest days of my life in Minnesota, where I lived for twenty years, in Mower county, and when I get back to this society I appreciate the meetings, and it brings back to my mind the old times. There seems to be a spirit of good fellowship and cheer about Minnesota people. They are all pushers and workers, and I presume that is the reason that this is the strongest horticultural society in the world at the present time. It is conceded to be the best society in the United States, and while we think we have the best model in South Dakota, you outstrip us in numbers. I think we are now going to do something. We do not boast of what we have done, but of what we are going to do. We have a great state with great possibilities before us, and we are getting a lot of information from you people that is going to be of the greatest benefit to us in our work. We feel very grateful to you for affording us the opportunity of gaining this information. I will not take up any more of your time, simply to thank you for your kind reception and to say that I am always glad to be with you.

The Chairman: We will now proceed with the program of the afternoon. The first number is by Mr. Taylor. The general subject treats of "The Nurseryman and His Customers," and Mr. Taylor is going to start it by telling of the advantages of planting home grown stock.

Mr. W. L. Taylor, of Howard Lake, then read a paper upon "The Advantage to the Minnesotan of Planting Home Grown Nursery Stock." (See index.) Discussion.

The Chairman: We have given all the time we can spare to this question. We will now pass to the next subject, and Mr. Mitchell will read a paper on the subject of wintering nursery stock that is delivered in the fall.

Mr. D. M. Mitchell, of Owatonna, then read a paper on the subject of "Wintering Nursery Stock Delivered in the Fall." (See index.)

Discussion.

The Chairman: We will have to pass to the next paper. The next two papers being so similar we will discuss them together. The first is by Mr. Reid, of St. Paul.

"The Man Who Sells The Nursery Stock—from the Standpoint of His Employer," was the subject of a paper presented by Mr. E. W. Reid, of St. Paul. (See index.)

The Chairman: I think before we enter upon any discussion we had better have the next paper. This is a matter of a great deal of interest. I will call upon Mr. Babcock to read his paper.

Mr. W. M. Babcock, of Minneapolis, then read a paper on "The Legal Relations of the Nurseryman, His Agent and the Customer." (See index.)

Discussion.

The Chairman: We will now take up the next subject on the program, which relates to rose culture, upon which Mr. Nordine has prepared a paper.

Mr. John Nordine, of Lake City, then read a paper treating of "Rose Propagation in the Minnesota Nursery." (See index.)

Discussion.

The Chairman: The next number on the program is a paper by Mr. Nutter on the subject of our native ornamental plants.

"Native Ornamental Plants Valuable for Propagation," was the subject of the paper read by Mr. Frank H. Nutter, of Minneapolis. (See index.)

Discussion.

The Chairman: We have a paper here by Mr. Snyder, which I will ask Mr. Latham to read, as Mr. Snyder is not present—but he sent on his paper.

Secretary Latham then read a paper prepared by Mr. C. E. Snyder, of Preston, on "The Man Who Sells the Nursery Stock—from His Own Standpoint." (See index.)

The Chairman: As we shall have a little time on our program I am going to call on Mr. Kellogg for that paper on the Wausau orchard.

Mr. Geo. J. Kellogg, of Wisconsin, then read a brief paper giving a description of the "Wausau Trial Orchard." (See index.)

Discussion.

The Chairman: We have the honor of again having with us our distinguished friend from Wisconsin. I am very glad to see him here, as you all are. He has presented no credentials except his face, and that is enough. I am going to call on him as the delegate from Wisconsin, and we will recognize him as such, and I want him to come to the platform and "whoop" it up for three or four minutes.

Mr. A. J. Philips, (Wis.): Prof. Sandsten is the delegate from Wisconsin, and lots of people over there think the professor knows it all.

The Chairman: Lots of people over here think the same way. (Laughter.)

Mr. Philips: Mr. Kellogg spoke of the Sweet Russet crab. They are top-worked in the north row. I will tell a story on the professor first. We had a meeting at La Crosse once, and I was looking over the professors. The professor was younger than Prof. Green, but no greener; it was Prof. Carlyle. We were walking down the street together, and they were joking me that I did not know which was east and which was west. I told them I was somewhat like the professor. When the railroad was first built through Ohio it was announced that on a certain day the train would come through. There was a man back in the woods who had never seen the cars, and he had a wonderful idea of what the engineer was like. He thought an engineer must be a man like

Samson or Hercules, and he made up his mind to see the engineer and find out what he looked like. They walked eight miles to the station; they heard the whistle of the engine, and when it came in they walked right up to it. The engineer happened to be a little fellow, weighed about 120 pounds. The man who had come on purpose to see him and expected to find a wonderful looking man looked at him from one side and another, he walked around him and looked at him up and down, and then he said to his companion, "Bill, it doesn't take much of a man for an engineer after all." That's what I thought about the professors. (Laughter.)

I am very glad to be here; I am always glad to come to your meetings. I usually come at night; I come at night to save time and appearances. This time I came up in the day time, and I am glad to see you all. I am glad to see my old friend here. Kellogg has got a record we can all be proud of. At the first meeting organized in 1850, Kellogg was there. During the last year Stickney, Tuttle and some of the others have gone, but Kellogg is still here and is about the only one left, and we want to make him president of our society next year. He has worked for horticulture in Wisconsin since 1856. He has kept more strawberry records and weather records that we can look back to than any other man I know of. I hope he will live to come to our meetings for the next twenty years. I will not take up any more of your time, but I want to say that I am very glad to be here.

The Chairman: We are always glad to have our friend Philips with us, and we can always depend on hearing words of cheer and expressions of good will from him.

We have another paper on the program which I will call for now, and which is of a little different nature than the others. It is an illustrated subject giving views of a Minnesota nursery, by Mr. Roy Underwood. After the conclusion of these views we will consider ourselves adjourned.

Mr. Roy Underwood then exhibited a large collection of slides showing many phases of nursery work, closing with a number of portraits of older members of the society, each picture being appropriately referred to or described.

WEDNESDAY MORNING SESSION.

The meeting was called to order by the chairman, Prof. Green, at nine o'clock.

The Chairman: The first number on the program this morning is the report of the secretary.

"The Report of the Secretary" was then submitted by Mr. A. W. Latham. (See index.)

The Chairman: I think the society has every reason to congratulate itself upon the condition reported to us by the secretary.

The next report is that of the treasurer, Mr. Lyman.

Mr. A. B. Lyman, of Excelsior, presented the "Treasurer's Report" for the past year. (See index.)

The Chairman: We will now have the report of the executive board, of which Mr. Elliot is chairman.

A brief "Report of the Executive Board" was then presented by Mr. Wyman Elliot, its chairman. (See index.)

Mr. Elliot: Supplemental to this report I wish to say that it is not an easy matter to get an appropriation through our legislature at the present time, when there is a great demand for money for other institutions. They cut us down to \$500, but said if we must have it to carry on our work they would consider our request at some future time. With the very efficient secretary we have the board has very little to do. I suppose I could have sat down and dictated four solid pages of typewritten matter, but that was not necessary. (Applause.)

The Chairman: The next on our program are the reports of vice-presidents. These are to be handed in at this time, and each vice-president is supposed to make a digest of his report and put it in a two minute talk. That means they will have to be boiled down very considerably in order to give us an idea of the work that has been done.

The following vice-presidents then submitted reports:

Mr. J. F. Benjamin, Hutchinson, Third Congressional district. (See index.)

Mr. J. O. Weld, Fifth Congressional district. (See index.)

Mr. W. H. Eddy, Howard Lake, Sixth Congressional district. (See index.)

Mr. G. A. Anderson, Renville, Seventh Congressional district. (See index.)

Mr. F. B. McLeran, Wrenshall, Eighth Congressional district. (See index.)

Mr. W. J. Tinglev, Withrow, Fourth Congressional district. (See index.)

The Chairman: This concludes the reports of vice-presidents so far as they are present. The next will be the reports of superintendents of trial stations.

The following superintendents submitted reports of their respective trial stations:

Mr. T. E. Cashman, Owatonna station. (See index.)

The Chairman: I want to say that Mr. Cashman is carrying on the work started by Mr. Dartt in a very sensible and satisfactory way.

Mr. Dewain Cook, Windom station. (See index.)

Mr. A. B. Lyman, Excelsior station. (See index.) Discussion.

Judge L. R. Moyer, Montevideo station. (See index.)

Mrs. Jennie Stager, Sauk Rapids station. (See index.)

Mr. F. J. Cowles, West Concord station. (See index.)

Mr. F. B. McLeran, Wrenshall station. (See index. Discussion.

The Chairman: We have a little more time on our program than we expected to have if you wish to have any further discussion. If not we will take up the reports of local societies. I will first call on the Southern Minnesota society.

Mr. A. W. Massee, of Albert Lea, the president, submitted a report in behalf of the Southern Minnesota Horticultural Society. (See index.)

Mr. Massee: Our society has thirty-three members, and we hold our meeting in January.

The Chairman: We will next have the report of the Willmar Horticultural Society if there is any one here to represent it.

John Wicklund: I will not take up much time, but I will only state that our society was organized last year, and we are greatly in hopes that it will be a success in the future. We are trying to improve both in fruit and in the growing of shrubbery. The report I made is left with the secretary and will be published, so I will say nothing about that part of it. My own observation is that fruit of various kinds, and apples such as the Wealthy, Duchess and Hibernial, and also the Okabena, did very well. Some of the crabs were quite badly affected with scab. Plums were not a good crop this year according to my observation. The plum rot seems to have affected plums to quite a considerable extent. I cannot explain what the cause is, but I would like to know what the remedy might be. As far as other fruits, such as gooseberries, currants and raspberries are concerned, as a rule they did very well. I am trying an experiment with grafts from Sweden, and I have written Secretary Latham in regard to that. I had eight different kinds of grafts last spring, and three of them bore fruit this past summer, being top-grafted on the Hibernial. So I have specimens of three different kinds of that Swedish apple, but what they are going to do in the future I am not ready to say. The trees that bore fruit this summer produced summer apples, but I have what they claim to be in the old country a winter apple, and I hope to be able to report on the winter varieties later. I understand that what we want is a winter apple instead of a summer apple, of which we have plenty now.

Mr. W. L. Taylor: I had the opportunity of attending the Willmar street fair. They had one booth devoted to horticulture, and the horticultural society was well represented. They were giving away those little fruit lists and were doing an immense amount of good. I am sorry Mr. Wicklund was too modest to speak about that.

The Chairman: We come now to a subject that will interest every apple grower, the subject of blight in the apple orchard. There are two papers to be read on this subject, and we will have both of them read and have the discussion follow. Mr. Dewain Cook has the first paper on the subject.

Mr. Dewain Cook, of Jeffers, treated the subject of "Blight in the Apple Orchard and How to Reduce it to a Minimum." (See index.)

"My Success in Checking Blight," was the subject of a paper presented by Mr. C. W. Spickerman, of Excelsior. (See index.)

Discussion.

The Chairman: I will say that we might sit here and discuss this subject till tomorrow morning and perhaps not get nearer together than we are now. I want to say that we are very glad to welcome Prof. Sandsten as a delegate to our meeting, and hope he will take a free part in the discussions on the various subjects as they come up.

I wish also to say that on Thursday afternoon, at the meeting of the Forestry Association, Mr. Geo. H. Maxwell, the chairman of the executive committee of the National Irrigation Association, will deliver an address. Mr. Maxwell is one of the best orators I ever heard. We got him to come up here from Chicago to address this meeting on matters of deep interest to us all. I hope you will greet him with a large attendance.

I notice that Mr. Randall, the secretary of the State Agricultural Association is in the room, and as he has not been able to meet with us for several years I am going to call on him for a few words at this time.

Mr. E. W. Randall: Mr. President and Members of the State Horticultural Society: As many of you know, the International Live Stock Show and the annual meetings of the various breeders' associations usually convene in Chicago during this week, and it is necessary for me to attend those meetings, and that is the reason I have not been with you for several years. This year the time was set two weeks later, and I therefore have the good fortune to be at home.

I supposed I could come quietly into the meeting and sit here without being called upon to speak to you. I have no set address to make, but I would like to call your attention to the next meeting of the state agricultural society, in which you are all interested. That convention will be held on the 9th, 10th and 11th of January in this city. This society is entitled to three delegates. I hope you will elect them during this session. The state forestry association which meets with you is also entitled to three delegates. The state beekeepers' association is also entitled to three delegates. I hope delegates will be selected so that this society, the forestry association and the beekeepers' association may be represented in that meeting and exercise their privileges in accordance with the constitution.

I am sure you all feel that the work of the state agricultural society in the conduct of the state fair is important. Your society makes excellent exhibits every year, and I believe they are very beneficial. When you show at the state fair the best products of your orchards, you attract attention and increase the interest in

horticulture. I am thoroughly convinced that the state fair is useful to you as well as others in the state, and we are glad to have you there in numbers each year. Again I wish to remind you that you should exercise your privilege today in selecting delegates to attend the annual meeting. I thank you. (Applause.)

The Chairman: It is always pleasant to have something on the program a little out of the ordinary, something that affords a change from the usual routine, and I am going to call on Mr. Leach to speak about growing peaches.

Mr. A. D. Leach, of Excelsior, in a paper then discussed the question "Can Peaches Be Grown in Minnesota With Profit?" (See index.)

The Chairman: This is a very delightful paper, presented in a very delightful way and by a very delightful gentleman. (Applause.)

On motion of Mr. Cook the meeting adjourned.

WEDNESDAY AFTERNOON SESSION.

The meeting was called to order at 1:30 by the chairman, Prof. Green.

The President: Gentlemen, the first item on our program this afternoon is the report of the committee on fruit list. Mr. Andrews is chairman of that committee; and I will ask him to read his report.

Mr. J. P. Andrews, chairman, then submitted the "Report of the Committee on Fruit List." (See index.)

A motion by Capt. A. H. Reed to add the Northwestern Greening to the list of the "first degree of hardiness" was lost.

On motion of Mr. W. L. Taylor, the Okabena was unanimously placed in the list of "first degree of hardiness."

A motion by Judge Moyer to add the Peerless to the list of "first degree of hardiness" was lost.

A motion by Mr. O. F. Brand to add the Estalline and Itasca to the list recommended for "commercial planting" was lost.

On motion of Mr. Dewain Cook the report was adopted as amended.

The Chairman: The next item is the report of the committee on ornamental list. Mr. Hobart is not present, and I will call on Mr. Loring.

Mr. C. M. Loring, on behalf of the committee, then presented a report on the "Ornamental List." (See index.)

Discussion.

The Chairman: The next number on our program is the "Chop Talk," which has come to be a feature of our annual meetings.

Mr. Wyman Elliot, of Minneapolis, then devoted some time to the discussion of various subjects under the general title of "Chop Talk No. 4." (See index.)

The Chairman: We will next have a paper by Mr. Kenney. This is a subject in which all apple growers are interested, and I think Mr. Kenney can give us some information from his experience that will be most valuable.

Mr. Seth H. Kenney, of Waterville, then read a paper entitled, "Lessons from Experience in Top Grafting." (See index.)

Discussion.

The Chairman: It is time to draw this discussion to a close, and we will now turn over the meeting to the Woman's Auxiliary.

WOMAN'S AUXILIARY—JOINT SESSION.

The joint session of the Woman's Auxiliary was called to order by the president, Miss Emma V. White, at three o'clock, Miss White extending the "President's Greeting" to the assembly. (See index.)

The "Secretary's Report" was then submitted by Mrs. Anna B. Underwood, of Lake City. (See index.)

The President: Some excellent work has been done during the past year in encouraging the young people in the work of planting not only flowers but what we might call the more practical things in horticulture, and as nurserymen you will be glad to know that this work is being considered in our schools. A report of this work of "Horticulture in the Schools" will be presented by Mrs. W. T. McMurrin, of St. Paul. (See index.)

Discussion.

The President: In Minneapolis there have been things done this summer, and at one of our suburbs at Lake Harriet they have an association that has done a great deal in beautifying the surroundings of that little community. Mrs. Nelson will tell us what they accomplished.

"An Association as an Incentive to the Improvement of Home Grounds." Mrs. Milton O. Nelson, Minneapolis. (See index.)

Discussion.

The President: I will call on Mrs. Underwood, who will speak somewhat along the line of the last two papers.

Mrs. J. M. Underwood, of Lake City, then read a paper on the subject of "One Season's Work with Children and Flowers." (See index.)

Mr. S. M. Owen: I feel disposed to make some remarks, but I would prefer to hear the other paper read. I feel there is not enough attention paid to this subject, and I want to give some reasons why, and if this other paper is read I can refer to all of them.

The President: The next and the last paper on the program will be presented by Mrs. La Penotierre.

Mrs. E. M. La Penotierre, of Minneapolis, then spoke of "The Study Club and Its Advantages for Busy Women." (See index.)

Discussion.

The meeting of the Woman's Auxiliary was then declared adjourned.

THURSDAY MORNING SESSION.

The meeting was called to order by Prof. Samuel B. Green, presiding pro tempore, at 9:30 o'clock.

The Chairman: We are going to devote half an hour to the discussion of blight this morning. Half an hour is not much time in which to handle so big a subject, so you will have to talk to the point. I am going to hold each speaker down to five minutes, but I don't want to cut you off unless I have to. I will first call on Mr. Elliot.

An informal discussion on "Blight" was then had, a great many members participating. (See index.)

The Chairman: We will now take up a subject that was deferred from yesterday, something from Mr. Philips about the relation of the stock and scion.

Mr. A. J. Philips, of West Salem, Wis., then spoke briefly upon "The Relation of Stock and Scion." (See index.)

Discussion.

The Chairman: This is all the time we can devote to this subject, and we will now take up the regular morning's program, the general topic of which is a "Calendar Program for May and June," and which ought to prove very valuable to all fruit and vegetable growers. The first paper treats of small fruits in May and June. There are really two papers on this subject, one by Mr. Farmer and another by Walter Yahnke, a son of our old friend, Frank Yahnke, of Winona.

Mr. E. A. Farmer, of Minneapolis, and Mr. Walter Yahnke, of Winona, then each read a paper on the subject of "Small Fruits in May and June." (See index.)

The Chairman: Perhaps since these papers treat of the same general subjects we might have the next two read and then discuss them as a whole. The next paper deals with the apple orchard, and will be read by Mr. Nils Anderson, of Lake City.

"The Apple Orchard in May and June" was discussed in a paper by Mr. Nils Anderson, of Lake City. (See index.)

The Chairman: Now Mr. Merritt will tell us about the plum and cherry orchard, and then we will discuss the four papers together.

Mr. C. W. Merritt, of Winona, then read a paper on the treatment of "The Plum and Cherry Orchard in May and June." (See index.)

Discussion.

The Chairman: We must now take up our next topic which in this case has to do with vegetables, and Mr. Bailey will tell us about the vegetable garden.

"The Vegetable Garden in May and June" was discussed in a paper by Mr. J. Vincent Bailey, of Newport. (See index.)

Discussion.

The Chairman: We shall have to go on with our program if

we hope to finish on time, and the next number will be a paper by Mr. Bost on grape culture.

"The Vineyard in May and June" was the title of a paper presented by Mr. A. A. Bost, of Excelsior. (See index.)

Discussion.

The Chairman: We now change the subject from fruits and vegetables and take up the consideration of the flower garden, a subject upon which Mrs. Gibbs will read a paper.

Mrs. F. H. Gibbs, of St. Anthony Park, then read a paper on the treatment of "The Flower Garden in May and June." (See index.)

Discussion.

The Chairman: If we run on with this discussion it may interfere with our program. Prof. Washburn is here and we may have to hurry more than we expected to do. Prof. Washburn will give us a talk on spraying.

Prof. F. L. Washburn, of St. Anthony Park, then addressed the society on the subject of "Winter Spraying in the Orchard and Nursery." (See index.)

Discussion.

On motion of Mr. Brackett the meeting adjourned until 1:30 in the afternoon.

THURSDAY AFTERNOON SESSION.

The meeting was called to order by the chairman, Prof. Green, at 1:30 o'clock.

The Chairman: As Mr. Elliot is not present we will first call for the report of "Committee on President's Address," of which Mr. Cook is chairman.

Mr. Dewain Cook, on behalf of the committee, then submitted the "Report of Committee on President's Address." (See index.)

On motion of Mr. Cook the report was unanimously adopted.

The Chairman: As we shall have some time on our program not otherwise taken up I think we had better dispose of the questions in the question box. I have distributed these questions to various members to answer, and I will first call on Prof. Hansen to answer the questions that were given him.

(These questions and answers will be found at various places in the volume.)

The Chairman: That finishes the questions in the question box, and as Mr. Elliot is now present we will hear the report on seedling fruits.

Mr. Wyman Elliot, chairman, then submitted a "Report of the Committee on Seedling Fruits." (See index.)

The Chairman: Mr. Yahnke is present, we have not heard from him, and I am going to call on him for a few remarks. (See index.)

The Chairman: It is no wonder that farmers' institutes are held spellbound by this orator from Winona. No wonder he makes it helpful and instructive and entertaining as well. It is a very rare thing to find a man who can combine those qualities as well as Mr. Yahnke. (Applause.)

ELECTION OF OFFICERS.

The Chairman: The time has come for the election of officers, and I will appoint Mr. Bailey and Mr. Lyman as tellers.

The results of the election was the unanimous choice of the following officers: (See index.)

Mr. Elliot: Mr. Chairman, while we have not the pleasure of having our president with us at this session it is through no fault of his. He was anticipating a royal good time here, but sickness overtook him, and, of course, he was unable to come, but I want to say that he is one of the most helpful men we have in the society, and therefore I feel gratified at the unanimous endorsement he has received in his absence. (Applause.)

The Chairman: That finishes up the business of the horticultural society for this session. We meet tomorrow morning at 9:30, and the first item on the program is what is known as a "free parliament," and at that time Mr. Elliot is going to give a new method of top-working which pleased a number of us very much. This method of top-working was shown at the meeting of the American Pomological Society in September.

On motion of Mr. A. B. Lyman the meeting adjourned.

MINNESOTA STATE FORESTRY ASSOCIATION—JOINT SESSION.

The meeting of the Forestry Association was called to order by the president, Mr. C. M. Loring, at 3:30 o'clock.

The President: We have today a very full program and a very good one, in which I think you will all be interested. It has always been customary heretofore for the president to deliver an address. I think we shall omit that this time, and I simply wish to say to you that I am very glad to meet you again, and I hope the coming year will show more good work than has been done for some time. We were very fortunate in securing the services as secretary-treasurer of the association of Mrs. Lydia Phillips Williams, who needs no introduction to you, who has done so much for forestry throughout the state, and who I know will be of great service to us during the coming year.

Mrs. Lydia Phillips Williams, of Minneapolis, then delivered an address upon the subject of "Minnesota's Forest Reserve." (See index.)

The President: The next speaker is a lady whom you will all be glad to hear, Mrs. Hudson, of Lake City.

Mrs. J. B. Hudson, of Lake City, then spoke upon the "Condi-

tions of the Cass Lake Reservation as I Found them." (See index.)

Mr. D. S. Hall: I want to inquire whether you are going to discuss any of these papers that have been read by the ladies. I noticed some little matters that might be taken up and discussed. There are some people here from Cass Lake from whom we would like to hear.

The President: In order that we may complete our program, I think we had better take up the additional numbers, and then I believe there will be ample time to discuss the whole subject. The next number on the program is a paper by Judge Moyer.

Judge L. R. Moyer, of Montevideo, then read a paper on the subject of "Prairie Forestation." (See index.)

The President: We are now to have the address of the afternoon by Mr. Maxwell, whom you will all be glad to hear.

An "Address" was then delivered by Mr. Geo. H. Maxwell, Chairman Executive Committee, National Irrigation Association, Chicago. (See index.)

The President: We are under great obligations to Mr. Maxwell for his splendid address and in behalf of the forestry association and the horticultural society I wish to thank him most heartily.

Mrs. Lydia Phillips Williams introduced the following resolution and which on her motion was unanimously adopted:

Whereas, the resolution of the Minnesota legislature last April urging congress to open for settlement the Minnesota forest reserve at Cass Lake was passed without discussion upon its merits or previous notice, and

Whereas, the statements in said resolution are misleading and in certain particulars incorrect, and

Whereas, the resolution does not represent the voice of the majority of the people of the state, or the best interests of the state or the Indians:

Resolved, that the Minnesota Forestry Association hereby petition congress to refrain from granting the request embodied in said resolutions, and respectfully urge congress to uphold said reserve—the act creating it having been a compromise measure, for which all interested were and should remain agreed.

Mr. A. G. Bernard: Although I am not a member of the forestry association I would like to have a few moments to speak upon some of the matters that have been presented here. I am a member of the horticultural society, and I was under the impression that such membership constituted membership in the forestry association.

On motion of Mrs. Williams, Mr. Bernard was given the privilege of the floor. Discussion on Cass Lake Forest Reserve.

On motion of Prof. Green the matter of appointing delegates to the convention of the Upper Mississippi River Improvement Association was referred to the executive committee.

Here followed the address of Hon. C. M. Loring on "Economic

Value of Shade Trees," (See index.) illustrated by many appropriate and beautiful lantern slides.

On motion of Mr. Strand the meeting adjourned.

FRIDAY MORNING SESSION.

The meeting was called to order by the chairman, Prof. Green, at 9:30 o'clock.

The chairman: We will devote a portion of the time this morning to a "free parliament." Mr. Yahnke is to open the discussion this morning on any topic he may see fit, and Mr. Elliot is going to bring up the matter of a new method of grafting. We are now going to hear from Mr. Yahnke. "Free Parliament." (See index.)

The Chairman: I think the members will all be interested in a new method of grafting, and Mr. Elliot will explain the method. It is called the Excelsior method. (Applause.)

Mr. Elliot: I am only an amateur in the business.

The Chairman: How long does it take to become a professional? (Laughter.)

Mr. Wyman Elliot then briefly demonstrated a new method of grafting as learned at the meeting of the American Pomological Society. (See index.)

The Chairman: We have a little left over from the session of yesterday afternoon, and we will take it up in the program of this morning. We have with us from South Dakota Mr. De Wolf, the president of the South Dakota Horticultural Society. We were not able to get to Mr. De Wolf's paper yesterday morning, and we intended to bring it up yesterday afternoon but failed to make connection then also. I hope he will come forward and present his paper and give us some greetings from South Dakota.

Mr. M. J. De Wolf, of Letcher, S. D., then presented a paper on the subject of "Pointers in Prairie Orchardng." (See index.)

Mr. C. M. Loring: Would it be in order to introduce a resolution at this time? We want the influence of the largest horticultural society in the world in this forestry matter. I want to read the resolution presented by Mrs. Williams yesterday at the meeting of the Forestry Association.

Mr. Loring then presented the following resolution: (See resolution on page 498.)

On motion of Mr. Loring the resolution was unanimously adopted.

The Chairman: We will now take up the regular program for this morning, and I will first call upon Mr. Wright, from whom we always have reason to expect something good. The general subject this morning is "Storing and Marketing the Product of the Orchard and Garden."

Mr. R. A. Wright, of Excelsior, then read a paper dealing

with the subject of "The Use and Abuse of the Home Market by the Fruit Grower." (See index.) Discussion.

The Chairman: Now right along this same line we will have a paper by Mr. Smith, of Lake City.

"The Marketing of Apples—from the Standpoint of the Grower." was the subject of the paper presented by Mr. E. A. Smith, of Lake City. (See index.)

The Chairman: Now before discussing any of these papers we will have another on the same general subject, and this time we shall hear from the standpoint of the buyer. I will call upon Mr. Bryant, who is a commission merchant.

Mr. Geo. E. Bryant, of Minneapolis, then spoke of the "Gathering and Marketing of Minnesota Fruits—from the Standpoint of the Commission Merchant." (See index.)

Discussion.

Mr. G. H. Booth, of Lake City, then demonstrated the "Advantages to Grower and Dealer in a Fruit Growers' Association." (See index.)

The Chairman: Mr. Hotchkiss, of Eau Claire, Wis., is not here, but his paper, "Co-operation in Selling Fruit," will be published in the report. (See index.)

We will next have a paper on the storage of fruit, by Mr. Shuman, of Excelsior.

Mr. H. W. Shuman, of Excelsior, then read a paper on the subject of "Cellar Storage of Orchard Fruits." (See index.)

Discussion.

Mr. Chairman: Mr. Elliot had a chance to go to the Ozark region to see what they were doing there. Their fruit comes up here to compete with ours, and I want Mr. Elliot to tell us his story about his trip to the Ozarks. I will give him two minutes and a quarter in which to do it. (See index.)

On motion of Mr. Smith the meeting adjourned.

FRIDAY AFTERNOON SESSION.

The meeting was called to order by the chairman promptly at 1:30 o'clock.

The Chairman: The first item on the program is a talk by Prof. Hansen about his visit to Luther Burbank, and I believe that it is a story worth listening to.

Prof. N. E. Hansen, of Brookings, S. D., then told of spending "Two Hours with Luther Burbank—His Work as an Originator of New Fruits and its Application to Minnesota Needs." (See index.)

Discussion.

The Chairman: We have given all the time we can possibly spare to this subject. It has been very interesting, but there is a limit, and we must take up the rest of the program.

Prof. Saml. B. Green then gave a thirty minute lecture, ac-

accompanied by the use of models, on the subject of "Flowers of Fruits and their Cross-Pollination."

The Chairman: The next paper is one by Mr. Peterson on a series of experiments in cross-pollination. His experience was very practical, and at my request he has consented to present it here.

Mr. W. A. Peterson, of St. Anthony Park, then detailed "A Season's Experience in Cross-Pollination." (See index.)

The Chairman: Now we are going to hear from our friend Gardner, of Iowa, who will tell us something about his experience with plums.

Mr. Chas. F. Gardner, of Osage, Iowa, read a paper giving a description of "Growing New Varieties of Plums." (See index.)

The Chairman: We will have another paper on plums by Prof. E. P. Sandsten, with whom many of you are acquainted.

"Growing Seedling Plums for Definite Results" was the subject of the paper presented by Prof. E. P. Sandsten, the professor of horticulture of the Wisconsin State Experiment Station, at Madison. (See index.)

The Chairman: The next number, and the last on our program, is one by Mr. Underwood, of Lake City.

Mr. J. M. Underwood, of Lake City, then read a paper on the subject of "The Seedling Apple Orchard, its Inception, Treatment and Uses." (See index.)

Mr. Underwood: I want to make a motion that it is the sense of this society that our executive board should plan or should work out some plan for an auxiliary to this society to be known as the "Plant Breeders' Auxiliary to the Minnesota Horticultural Society."

The Chairman: Mr. Underwood has made a motion to provide for carrying on this work along practical lines, and President Wedge in his address urged a similar movement.

The motion offered by Mr. Underwood was then put to a vote and prevailed unanimously.

Judge L. R. Moyer: Mr. Chairman, I have a resolution I wish to offer:

"Whereas, the University of the State of Minnesota was at one time the owner of an experimental fruit farm at Lake Minnetonka, and

"Whereas, the regents of the University of Minnesota have sold that farm and have appropriated the money arising from such sale to the general purposes of the university, and

"Whereas, it has become necessary to secure a new location for the purpose of propagating and originating new shrubs, fruits and flowers, therefore

"Resolved, that the regents be hereby requested and urged to purchase a new tract of land to devote to that purpose."

Judge Moyer moved the adoption of the resolution.

Mr. O. F. Brand: I would like to amend by saying tracts instead of tract.

Judge Moyer accepted the amendment, and the motion being put to a vote prevailed unanimously.

The Chairman: Now we will take up a few matters of business, and the first is the reports of committees. Is the obituary committee ready to report?

Judge Moyer, as chairman, then submitted the following "Report of the Committee on Obituary,"

The committee did not have opportunity to gather information in making this report; however, we will say that among the deaths that have occurred during the past year are those of Prof. J. L. Budd, emeritus professor of the college of agriculture of Iowa, who, in his great work for the advancement of prairie forestry, is known to all of us, and whose death is a loss to all of us.

Also the death of A. G. Tuttle, who was a pioneer in the state of Wisconsin, in whose orchard the first Russian apples were planted, and in whom we have lost a leading spirit in this work of horticulture.

We have also learned of the death of S. D. Hillman, who for five years was secretary of this society in its early days and who was known to many of you perhaps.

We have also heard of the death of Mrs. Kennedy, who formerly lived at Hutchinson and who was an enthusiastic horticulturist and who always attended these meetings up to a few years ago.

There are doubtless other members who have died during the year whose names have not been reported to the committee, but whom the committee would like to hear about so that a suitable obituary notice may be prepared and published in the record.

The Chairman: This report will be published in the proceedings. There is one more committee to report, that on final resolutions, of which Mr. Bacheller is chairman.

Mr. T. T. Bacheller, as chairman, then presented the "Report of the Committee on Final Resolutions."

Your committee would respectfully submit the following resolutions in behalf of the meeting:

Resolved: That we are under sincere obligations to the Twin City Telephone Company for installing a telephone at our place of meeting and maintaining it without expense to the society.

Resolved: That we hereby tender our thanks to the Cable Piano Co., for the use of the instrument loaned for this occasion, and to the musicians whose personal services added to the enjoyment of some of our sessions.

Resolved: That our thanks are due to the St. Cloud Reformatory for the beautiful display of chrysanthemums contributed and that we most earnestly commend the management of that institution for its influence in that section, in stimulating horticultural effort.

Resolved: That our obligations are also due to Hon. C. M. Loring and to Mr. Roy Underwood, for their entertaining stereopti-

con exhibits, emphasizing practical facts by the aid of object lessons which are not easily forgotten.

Resolved: That the interest in this meeting, and the resulting profit to its members, has been greatly augmented by the presence and counsel of delegates and visitors from other states and societies. They have our warmest thanks, and we hope to meet them again.

Resolved: That the society as a whole regard with deep respect and ardent appreciation the early and arduous labors of the veterans of our association, whose presence is in diminishing members annually, and whose whitening locks remind us that we cannot always have the priceless benefits of their experience.

Resolved: That our sympathy is hereby tendered to our President, Clarence Wedge, whose illness has deprived us of his valued aid and companionship. We trust that with health regained, we may meet him at future gatherings.

Resolved: That most hearty thanks are due to Prof. Saml. B. Green, who has so ably and acceptably presided over our meetings, leaving the duties demanding his attention at the School of Agriculture to efficiently conduct our sessions without remuneration or emolument.

T. T. BACHELLER,
M. R. CASHMAN,
H. HAGGARD.
Committee.

On motion of Mr. Yahnke the report of the committee was unanimously adopted.

TWO MINUTE SPEECHES.

(See index.)

The Chairman: I do not think it is necessary for me to make any closing remarks. I want to thank the society for the pleasant way in which they have treated me as presiding officer and to say that they have been very generous in conforming to the rulings I have made. I have tried to be as considerate as possible. I know the difficulty of carrying out a program in the time allotted, and it sometimes makes it necessary to cut off a speaker. I thank you very much for the consideration you have shown me in this matter. I will now declare the meeting adjourned.

Executive Board,

1906.

Record of the meeting of the board held in the secretary's office at 8 p. m., Dec. 4, 1905.

Those present were: Wyman Elliot, J. M. Underwood, L. R. Moyer, J. P. Andrews and A. W. Latham.

It was decided to increase the compensation of the official stenographer of the society, A. G. Long, from 10c a folio to 12½c a folio.

It was determined to offer \$500 for seedling apples on conditions to be later worked out.

The report of Mr. J. A. Vye, showing the books of the secretary and treasurer for the past year to be correct, was accepted and ordered filed.

Advertising rates in the society's monthly were increased 33 1-3%.

The following accounts were audited and approved:

A. B. Lyman, treasurer, premiums at summer meeting, 1905. \$141.00.

Wyman Elliot, expenses delegate to Pomological Society and seedling committee, \$44.54.

Adjourned to 8 A. M., Dec. 8, 1905.

A. W. LATHAM, Secretary.

WYMAN ELLIOT,
Chairman Executive Board.

Record of the meeting of the board held in the Secretary's office at 8 A. M., Dec. 8, 1905.

Members present were Wyman Elliot, Samuel B. Green, J. M. Underwood, L. R. Moyer, Frank Yahnke, J. P. Andrews and A. W. Latham.

Wyman Elliot was elected chairman for the ensuing year. A. W. Latham was elected secretary at the salary of \$1,200 a year.

The chairman of the board was instructed to approve the bonds of the treasurer and secretary at \$2,000 each.

A committee of the board, consisting of Wyman Elliot, S. B. Green and A. W. Latham was authorized to fill any vacancies in the offices of vice-president and appoint the standing committees.

The salaries of the president and treasurer were fixed at \$25 each per year.

The account of the secretary of expenditures in the secretary's office from June 20—Dec. 4, 1905, was approved and an order drawn on the treasury for the amount, viz. \$746.64.

It was decided to purchase of Mr. Wyman Elliot, at \$4.50 per barrel, sixteen barrels of Malinda apples which he had secured from S. H. Kenney, grown on top-worked Duchess apple trees, Mr. Elliot to secure the seeds from these apples and turn them over as directed by the board, and an order was drawn on the treasury to the amount of this bill, viz.\$72.00.

Adjourned to Dec. 18, 1905.
A. W. LATHAM, Secretary.

WYMAN ELLIOT,
Chairman Executive Board.

Report of meeting of the board held at 10 A. M., Dec. 18, 1905., at the office of the secretary.

All members of the board were present except Mr. L. R. Moyer.

A. W. Latham was elected delegate to the coming annual meeting of the State Agricultural Society, with authority to appoint one other delegate to the same meeting.

A. B. Lyman was selected delegate to the annual meeting of the Wisconsin State Horticultural Society and Messrs. S. B. Green, A. W. Latham and J. M. Underwood as delegates to the next meeting of the Upper Mississippi River Improvement Association.

The board proceeded to revise the list of standing committees for 1906. (See January Horticulturist for 1906.)

It was decided that the seed to be secured of Mr. Wyman Elliot from sixteen barrels of Malinda apples, purchased of him, should be turned over by him to Prof. S. B. Green to grow seedlings therefrom on the grounds of the state experiment station.

The account of the First Unitarian Church, rent of same during annual meeting, was ordered paid to the amount of . . . \$75.00.

It was decided to offer additional prizes to encourage the growing of seedling apples under the following conditions:

1st. \$100.00 per year for five consecutive years, commencing in 1912, to be given each year to the best late winter seedling apple, to be grown from seed not yet planted and within the following area: viz., Minnesota, the west half of Wisconsin, the northern two tiers of counties of Iowa, and South Dakota, North Dakota and Manitoba. A seedling apple having taken one prize under this offer cannot compete further therefor.

2nd. Competition open to any one within the area named, planting apple seed and making entry with the secretary of the society within one year of the time of planting, and giving also the name of the variety of apple from which the seed planted was taken.

3rd. A button with suitable device will be given to each competitor for these prizes, to be worn at the meetings of the society and elsewhere, as desired.

Adjourned sine die.

A. W. LATHAM, Secretary.

WYMAN ELLIOT,

Chairman Executive Board.

Record of meeting of the board held at the office of the secretary at 8 P. M., Tuesday, June 25, 1906.

The following members were present: Wyman Elliot, chairman; Prof. S. B. Green, Pres. Clarence Wedge, J. P. Andrews, Frank Yahnke, J. M. Underwood and Sec'y. A. W. Latham.

The accounts of the secretary for receipts and disbursements of office from Dec. 4, 1905, to June 25, 1906, were examined and approved and an order ordered drawn on the treasury for the amount, \$1871.53, the secretary at the same time to deposit that amount of receipts in the society treasury, leaving in the hands of the secretary the sum of \$420.24.

Adjourned sine die.

A. W. LATHAM, Secretary.

WYMAN ELLIOT,

Chairman Executive Board.

MEMBERSHIP, 1906.

ANNUAL MEMBERS.

A

Aanes, N. J. Clarkfield
 Abbey, Rev. D. P. Mott, N. D.
 Acklin, H. G. St. Paul.
 Ackerson, A. E. Elbow Lake
 Adsit, Dick. Belview
 Adams, W. W. Winnebago City
 Adams, A. P. Willmar
 Agar, J. J. Hancock
 Agre, Ole H. Sacred Heart
 Agnew, R. D. Raven, Alberta
 Ahlgren, Chas. J. Cokato
 Ahlstrom, John. Spicer
 Akin, D. F. Farmington
 Almquist, Chas. Otisville
 Alling, S. A. Homer
 Allen, E. M. St. Paul
 Almar, John. Collis
 Alwin, R. E. New Ulm
 Albrant, W. S. Mankato
 Alvord, W. C. Ceylon,
 Allickson, Adolph. Rugby, N. D.
 Amtsbauer, F. H. Franklin
 Arnold, Miss Harriet R. Duluth
 Archer, G. A. St. Paul
 Anderson, Louis. Long Lake
 Anderson, A. L. Hallock
 Anderson, J. A. Rollag
 Anderson, Andrew. Hallock
 Anbler, Miss Abble. Buffalo
 Anderson, Nils. Lake City
 Andrews, J. P. Faribault
 Anderson, Chas. A. Litchfield
 Anderson, P. E. Kandiyohi
 Aschenbeck, J. H. Mpls
 Ashley, Oliver. Madelia
 Anderson, Chas. Osakis
 Anderson, Wm. Forest Lake
 Anderson, Bent. Fertile
 Anticknap, H. Regina, Sask
 Anderson, Erik. Lake Park
 Antisdal, H. N. Milford, Iowa
 Anderson, Mrs. Chas. Hereford
 Anderson, J. C. Ruthon
 Anderson, Geo. W. Marine Mills
 Anderson, N. C. Albert Lea
 Anderson, Mathias. Lake Benton
 Anderson, C. C. Tyler
 Anderson, Aug. Watertown
 Anderson, O. J. Lansing
 Anderson, Louis. Rochester
 Andrews, Gen. C. C. St. Paul
 Andrews, Adam. Madelia
 Austvold, Nils B. Glenwood
 Aune, Martin. Starbuck
 Aunexdad, M. T. St. Peter
 Augel, Benj. A. Clarkfield
 Aune, Olof. Underwood
 Austin, O. A. McVillo, N. D.
 Austin, L. A. Excelsior
 Armitage, C. W. Canby
 Arnes, H. C. Mpls
 Arness, A. G. Benson
 Arends, T. G. Steen
 Arnold, P. W. Berthold, N. D.
 Anderson, Alfred. New Germany
 Anderson, A. Lester Prairie
 Anderson, John C. Montevideo
 Anderson, Alfred J. Underwood
 Anderson, Nels W. Maple Plain
 Anbom, C. Excelsior
 Anderson, Jos. K. Granite Falls
 Anderson, Alfred G. Tamarack

Anderson, B. N. Albert Lea
 Anderson, R. E. Hamilton, N. D.
 Anderson, Hans. Tumbridge, N. D.
 Anderson, Swen. Rugby, N. D.
 Anderson, H. Alfred. Williston, N. D.
 Anderson, Hans Geo. Nicollet
 Anderson, W. L. Mora
 Anderson, Dave. Comfrey
 Anderson, Alf. Clara City
 Anderson, V. C. Mpls
 Anderson, Nels M. Dassel

B

Barge, Paul. Henderson
 Bates, A. W. Excelsior
 Bacheller, T. T. Forest Lake
 Baldwin, H. J. Northfield
 Bailiff, R. L. Bloomington
 Bailey, J. V. Newport
 Bayard, P. C. Eden Prairie
 Baird, Rev. Andrew B. Winnipeg, Man.
 Bates, W. K. Stockton
 Bartsch, Charlie G. Mankato
 Baker, H. P. Ames, Ia.
 Bauleke, H. W. Le Sueur
 Barsness, J. A. Kenyon
 Batho, Geo. Winnipeg, Man.
 Bakken, L. A. Ada
 Baumgartner, B. Amboy
 Bandelin, Fred J. Arlington
 Baker, L. D. Morton
 Bakken, A. O. Albert Lea
 Barriagan & Thurston. Albert Lea
 Bakke, John. Sacred Heart
 Batchelor, J. P. Mpls
 Barnstad, Ole. Willmar
 Baklund, C. A. Willmar
 Baker, Sydney. Wykoff
 Bauer, Henry. Nerstrand
 Backer, Andrew A. New Ulm
 Bauer, Christ. Lakefield
 Baker, E. D. Fairmount, N. D.
 Barker, A. W. Wilton, N. D.
 Bateman, W. Ernest. Mpls
 Barry, M. C. Detroit
 Bakken, Geo. J. McHenry, N. D.
 Baasen, Albert R. Wendell
 Badroun, Peter. Harvey, N. D.
 Barton, Mrs. Isabella. Excelsior
 Badger, M. C. Mpls.
 Batcheller, C. E. Fingal, N. D.
 Barnard, Mrs. M. M. Mpls
 Bjorkman, A. M. Columbus, N. D.
 Berger, Geo. Arlington
 Beardsley, Benj. F. St. Paul
 Bennett, Wm. Lowry
 Beckwith, F. W. Evanston, Wyo.
 Besserud, M. O. Maple Plain
 Benjamin, J. F. Hutchinson
 Bernard, A. G. Cass Lake
 Berry, Frank. Stillwater
 Beckley, J. Nerstrand
 Rest, E. D. Mpls
 Berg, Hjalmar C. Starbuck
 Bertrand, P. P. Sleepy Eye
 Berge, John P. Starbuck
 Becker, J. C. Adrian
 Becht, Chas. Webster, S. D.
 Beck, Will B. Big Lake
 Bendix, Wm. Odessa
 Beer, Albert. Garden City
 Beseke, B. F. Arlington
 Berglund, Erick. Albert Lea
 Bickerdike, R. N. Tyler, Texas

Bigelow, Frank W. Mpls
 Bisbee, A. L. Mpls
 Bishop, E. A. St. Paul
 Bishop, C. R. Worthington
 Biermann, H. Glencoe
 Bisbee, John Madelia
 Birch, C. A. Willmar
 Bisbee, Albert J. Excelsior
 Biddle, E. Kerkhoven
 Biver, M. P. Starkweather, N. D.
 Bingham, J. W. Rugby, N. D.
 Bjelland, Reinhard, Hoffman
 Bjornsen, L. Twin Valley
 Bjornberg, Joe C. Willmar
 Bjornberg, G. J. Willmar
 Bluhm, A. G. Le Sueur
 Blanchard, E. H. Morgan
 Blakestad, L. Lyle
 Blair, C. L. St. Charles
 Blackmer, Ray C. Albert Lea
 Blanchard, B. S. Lewiston
 Blonde, O. A. Nerstrand
 Bly, C. W. Osakis
 Berthelsen, Christ Albert Lea
 Bergh, M. P. Madison
 Bengston, C. A. Jordan
 Benson, Wm. H. Morristown
 Beardsley, W. G. Buchanan, Mich.
 Benson, Edwin, Jackson
 Bedford, S. A. Brandon, Man.
 Berget, O. K. Crookston
 Behrens, J. C. Windom
 Berg, I. I. Climax
 Beltz, F. A. Boyd
 Bean, W. W. Westbrook
 Benson, T. O. Granite Falls
 Benson, E. H. Granite Falls
 Berg, Hans O. Cottonwood
 Berthenson, H. A. Grand Forks, N. D.
 Berge, C. A. New Rockford, N. D.
 Berg, E. O. Whalan
 Berrsell, H. H. Truman
 Beckman, J. W. Cokato
 Beebe, Miss Lida M. Mpls
 Bohanon, S. L. Silver Creek
 Boardman, F. H. Mpls
 Bowman, Dr. Fred Duluth
 Bowden, Dr. R. W. Duluth
 Boss, Wm. St. Anthony Park
 Bowers, D. M. Howard Lake
 Bost, A. A. Excelsior
 Bogart, W. S. Vande. Zumbrota
 Bolsta, A. L. Ortonville
 Bollman, Wm. Balaton
 Boardman, Mrs. H. A. St. Paul
 Bowers, Merrill LeRoy
 Bosshard, Fred Moorhead
 Boynton, E. W. Rochester
 Boelk, Ferdinand Lansing
 Bouska, Fr. Biscay
 Boyd, D. C. White Earth, N. D.
 Boyd, J. B. Willmar
 Boye, T. A. Albert Lea
 Boyce, W. R. Fairmount
 Borene, C. B. Montevideo
 Bonde, Edwin Cottonwood
 Boyle, M. S. Adrian
 Brown, Mrs. Chas. Cavalier, N. D.
 Bryant, Mrs. C. M. Sauk Center
 Briggs, O. P. Mpls
 Brown, J. M. La Crescent
 Bruce, Mrs. E. Mpls
 Brown, H. A. Brownsdale
 Brandon, E. N. Annandale
 Brackett, A. Excelsior
 Brady, C. H. Deerfield
 Bromstad, Andrew Milan
 Branson, M. L. Fairmount, N. D.
 Brown, A. D. Baraboo, Wis.
 Brevig, A. L. Starbuck

Brennen, C. M. Elk River
 Brooks, E. C. Excelsior
 Bradbury, A. L. Carlos
 Brown, Aug. Winthrop
 Britton, L. H. Janesville
 Bredvold, L. L. Belview
 Brown, J. P. Excelsior
 Brady, T. D. Deerfield
 Brown, A. R. Grove City
 Brady, Jas. F. Deerfield
 Bronnan, Ed. Kilkenny
 Briest, A. H. Gaylord
 Broman, Aug. Atwater
 Brown, John A. Windom
 Brown, Miss Emily Mpls
 Briest, Henry Arlington
 Bracklesberg, Casper Madelia
 Brevig, C. L. Starbuck
 Broderson, Jens P. Bluffton
 Brown, W. A. Big Fork
 Brynildson, Jas. Canby
 Briggs, H. W. Sanborn
 Bredwell, J. J. Springfield
 Brooks, S. G. Lake Crystal
 Bredvold, H. Springfield
 Brakke, John P. Windom
 Brogard, John W. Henning
 Brunes, Ole Smiley
 Bruce, Chas. R. Elk Point, S. D.
 Brooks, F. S. Farmer, S. D.
 Brainerd, John Portland, N. D.
 Bryne, Michael Grand Forks, N. D.
 Brown, David Grand Forks, N. D.
 Brown, C. A. Berthold, N. D.
 Brown, W. M. Crookston
 Braunwarth, Aug. C. Chaska
 Brimhall, Wm. H. Hamline
 Brown, G. B. Morton
 Brechet, J. J. Glencoe
 Broberg, Peter New London
 Bugbee, A. E. Paynesville
 Busse, H. F. Merriam Park
 Burton, Miss Hazel Deephaven
 Bull, Prof. C. P. St. Anthony Park
 Bull, J. H. Mpls
 Bunnell, M. C. Newport
 Bussier, Geo. Madelia
 Buro, John Ashawa
 Buchanan, D. W. St. Charles, Man.
 Buswell, L. A. Bruno
 Butler, Gilbert Mabel
 Bubar, W. E. Stockton
 Burling, A. J. Belle Plaine
 Bubolz, Chas. Winthrop
 Budke, Diedrich Fergus Falls
 Buss, O. E. Edgerton
 Burrson, B. Walnut Grove
 Buchanan, W. M. Canby
 Busch, Leonard Fulda
 Byrne, P. E. Kilkenny
 Bursch, Aug. F. Otisville
 Burtness, H. E. Caledonia
 Burkhart, J. A. DesLacs, N. D.
 Burks, Geo. Jamestown, N. D.
 Burud, Hoken Moose Lake
 Buggs, Wm. A. Stockton
 Butler, W. S. Chetek, Wis.

C

Carlson, C. H. Fertile
 Cairns, Miss Gertrude M. Ellsworth, Wis.
 Carroll, R. C. St. Anthony Park
 Campion, J. A. Faribault
 Carlson, Gust. Wyoming
 Cardozo, R. N. Forest Lake
 Campbell, A. F. Brandon, Man.
 Carlier, August Dodge Center
 Canfield, Geo. Big Lake
 Carpenter, M. V. Winnebago City
 Carlson, Andrew Harris
 Carr, W. A. Excelsior

Carlson, J. A. W.Eagle Bend
 Carpenter, G. L.Vermillion, S. D.
 Cameron, PeterTyner, N. D.
 Calderwood, R. M.Williston, N. D.
 Caraway, H. S.Windom
 Carson, A. R.Lansford, N. D.
 Carlson, HenryFergus Falls
 Carlson, Victor,Grayling
 Chapman, R. W.Plainview
 Christensen, M. A.Irving
 Christianson, P. A.Hinckley
 Christensen, B. P.Hutchinson
 Chatfield, Mrs. E. C.Mpls
 Chowen, W. S.Minnetonka
 Chase, O. C.Fergus Falls
 Cheney, W. H.Ollivia
 Chandonnet, Rev. Z. L.Mahnomen
 Christoferson, Oscar C.Mpls
 Chesney, T. E.Mpls
 Chamberlain, Mrs. Louis M.Mpls
 Chapman, J. M.Garden City
 Chord, Robt. N.Hasty
 Chase, BradfordJanesville
 Chapin, E. E.Mpls
 Chamberlain, S. F.Albert Lea
 Chambers, AlexOwatonna
 Chaffee, G. A.St. Paul
 Christianson, I. B.Blooming Prairie
 Cholupnip, J. A.Lakefield
 Christianson, SamWestbrook
 Chapman, C.Delano
 Christensen, ValdmerConstance
 Christoferson, NelsHoffman
 Churness, J. W.Berthold, N. D.
 Chapple, Chas. L.Rochester
 Cheney, JohnMorton
 Clemens, L. A.Storm Lake, Iowa
 Clausen, Hans A.Evan
 Clarke, Fred H.Avoca
 Clemens, E. J.Prescott, Wis.
 Clapp, H. W.Mankato
 Clements, O. H.Fargo, N. D.
 Clement, SimonAlbert Lea
 Clausen, P.Albert Lea
 Clark, H. E.Dodge Center
 Clarke, Jos.Mpls
 Clifford, H. H.Royalton
 Cleveland, HenryDuluth
 Cooper, MadisonWatertown, N. Y.
 Cosad, L. G.Mpls
 Core, W. B.Mpls
 Cook, DewainJeffers
 Cowles, E. D.Vermillion, S. D.
 Cooke, F. J.Roseau
 Cowles, FredWest Concord
 Comstock, Albert H.Duluth
 Conklin, Wm.Cambridge
 Conrad, JohnOrtonville
 Cole, HelmerPerley
 Cody, J. B.Janesville
 Cooley, E. G.Morristown
 Collins, Wm. S.Wadena
 Cobban, WalterMpls
 Colly, WillWinnebago City
 Colly, E. W.Hills
 Coldwell, C. E.Lake Crystal
 Coburn, C. F.Fulda
 Coles, D. H.Lakeville
 Cooper, E.Adrian
 Cook, F. L.Spearfish, S. D.
 Colebank, E.Madelia
 Cook, B.White Earth, N. D.
 Corliss, Geo. D.Carrington, N. D.
 Cousin, Frank A.Carrington, N. D.
 Corwin, S. F.Jamestown, N. D.
 Cox, E. G.Detroit
 Cook, PaulAdrian
 Connors, P. H.St. Anthony Park
 Connors, T. M.Mpls
 Cook, Mrs. LouisaHutchinson

Crosby, S. P.Braham
 Cross, Mrs. E.Sauk Rapids
 Crane, H. L.Excelsior
 Crane, R. E.Grand Meadow
 Crone, FerdinandNew Ulm
 Crane, E. C.Jordan
 Cross, L. E.Winnebago
 Crawford, W. M.Wahpeton, S. D.
 Crites, T. A.Esmond, N. D.
 Crosby, Hon. F. M.Hastings
 Crockett, E. D.Mpls
 Cressy, Jos. G.Mound
 Cutting, F. E.Byron
 Curtis, O. H.Osakis
 Culp, C. W.Swanburg
 Cutter, Wm.Grand Meadow
 Cultvane, W. F.Kilkenny
 Curtis, E.Portage La Prairie, Man.
 Cuzner, E. A.Mpls
 Cuzner, HaroldManila, P. I.
 Cummings, AlbertFairfax
 Cullen, M.Fulda
 Cummings, Geo. W.Mpls
 Cutler, M.Hillyard, Wash.

D

Day, Stephen H.Northfield
 Dahl, Paul A.Thief River Falls
 Danielson, SolomonRothsay
 Davids, O. T.Bagley
 Dahle, Thos K.Brownsdale
 Dalsing, Jno. P.Starbuck
 Davis, O. H.Madelia
 Dahl, JohnCenter City
 Day, C. P.Janesville
 Davis, Geo. H.Morristown
 Dahlen, O. E.Albert Lea
 Dahl, Otto L.New Richland
 Davison, A. H.Des Moines, Ia.
 Dally, M. J.Moorhead
 Dank, PhilipMankato
 Davis, W. H.Mapleton
 Davis, Evan J.Garvin
 Day, H. G.Brooklyn Center
 Davies, D. E.Lake Crystal
 Daniels, Miss Susan M.Mpls
 Dahl, M. J.Montevideo
 Dahlberg, O. Z.Sandstone
 Deline, W. F.Cannon Falls
 Decker, Jacob S.Austin
 Dey, Wm.Sleepy Eye
 Dettloff, Aug., Jr.Grand Meadow
 Dea, JohnMpls
 Denzer, Chas., Jr.Le Sueur
 De Mars, G. J.Fertile
 Dean, W. H.Morristown
 Delamater, D. P.Mpls
 Deming Co.,Salem, O.
 Dewars, WalterMpls
 Dehrer, HenryMendota
 De Bilt, SimonBerthold, N. D.
 Dickman, E. J.West St. Paul
 Dickson, W. A.Almena, Wis.
 Dike, C. C.White Bear
 Diethelm, M.Victoria
 Dixon, J. K.North St. Paul
 Dickerson, H. V.Sanborn
 Diehl Wm. H.Fulda
 Dickinson, C. W.Page, N. D.
 Domrese, F. G.Magnolia
 Douty, J. H.Wolf Creek, Wis.
 Dorsey, H. J.Glencoe
 Dodds, J. E.Wheaton
 Dole, Geo. A.Mpls
 Doepping, Wm.Claremont
 Dokken, C. O.Kenyon
 Drum, S. H.Waseca
 Drew, Prof. J. M.St. Anthony Park
 Dreyer, H. A.Delhi
 Drake, Geo.Madelia

Drost, Hans C.Mpls
 Durose, C. H.Mpls
 Dunn, J. W. G.St. Paul
 Durfee, F. A.Reading
 Durrell, J. J.Bigfork
 Dynes, W. S.Owatonna
 Dykeman, S. B.Svea
 Davidson, W. C.Mpls
 Dale, W. S.Rugby, N. D.
 Davis, Geo. A.Carrington, N. D.
 Dailey, Asa B.Duluth
 Dansare, Carl A.Granby
 Davey, Dr. Flora M.Mpls
 Daniels, Mrs. J. W.St. Paul

E

Eaker, E. C.Albert Lea
 Eastman, A. V.Grand Forks, N. D.
 Eastgate, J. E.Larimore, N. D.
 Eddy, P. P.Willmar
 Eddy, W. H.Howard Lake
 Eddy, Miss B. E.Mpls
 Eddy, O. J.Montevideo
 Eddy, ElmerSisseton, N. D.
 Effertz, PeterNorwood
 Egnell, A.Howard Lake
 Eix, GustavLittle Falls
 Einertsen, F. F.Westbrook
 Eisenhuth, Mrs. L. J.Carrington, N. D.
 Ellertson, R.Madelia
 Ellison, F. H.Mpls
 Eliason, EmilAlberta
 Ellis, ArthurDodge Center
 Eldred, E. L.Montevideo
 Ellickson, A. E.Lac Qui Parle
 Ellis, W.Crystal N. D.
 Elverud, Ed.Cannon Falls
 Ellis, Mrs. Carrie S.Sioux Falls, S. D.
 Ellefeson, OscarDawson
 Ellingson, S.Mpls
 Emerson, E. H.West Concord
 Empenger, F. J.Maple Plain
 Emerson, C. C.St. Paul
 Ekman, Carl E.St. Anthony Park
 Ekdahl, P. W.Otisville
 Eklund, P. A.Willmar
 Ekgren, JohnBuffalo
 Ekvall, Miss AliceMpls
 Erickson, OscarSt. Anthony Park
 Essig, Aug.Sanborn
 Eurich, Wm.Mpls
 Evans, D. M.Mpls
 Erdahl, Absalom,Blue Earth
 Ericson, G. R.Goodhue
 Erickson, E. G.Hendricks
 Erwin, D. A.Waseca
 Erickson, G. P.Svea
 Erickson, A. M.Westbrook
 Ericksen, J. P.Tyler
 Erickson, ErickBordulac, N. D.
 Ericson, SpencerMinnetonka
 Ewald, JuliusMpls
 Ewert, R.Janesville
 Ewen, H. S.Carrington, N. D.
 Engleson, F. J.Danvers
 Engen, C. H.Norway Lake
 Endsley, P. M.Mpls
 Engel, A.Morgan
 Engelrup, Wm.Morgan

F

Fallis, M. H.Jamestown, N. D.
 Farrar, F. F.White Bear
 Farrar, Geo.Elgin
 Farel, F. E.Glencoe
 Farnsworth, C. H.Albert Lea
 Fakler, ConradStockton
 Farwell, D. A.Hewitt
 Fallow, M. J.Blooming Prairie
 Farrington, M. P.Madison Lake
 Farmer, E. A.Mpls

Ferodowill, F. X.Wayzata
 Feland, F. T.Sioux Falls, S. D.
 Featherstone, S. T.Red Wing
 Felkey, Jr., D.Armstrong, Ia.
 Ferson, C. E.South Haven
 Felland, Prof. O. G.Northfield
 Fengrel, A. E.Rugby, N. D.
 Ferguson, J. A.Dennison
 Fitzke, W. F.St. Peter
 Fitzer, Chas.Robbinsdale
 Finne, DavidFriesland
 Fisher, G. R. GilruthLakeland
 Fisher, FrankGaylord
 Finke, C. W.Steen
 Fink, ChristSt. Bonifacius
 Finke, H. L.Berthold, N. D.
 Fleming, AlbertGarden City
 Flanj, MichaelSanborn
 Flikka, Olaus,Shelly
 Flaten, Prof. NilsNorthfield
 Floreen, SwanConstance
 Flint, Henry W.Gladstone
 Flintzer, A.Albert Lea
 Flatin, G. F.Spring Grove
 Fletcher, Paris,St. Paul
 Flagstad, J.Sacred Heart
 Flyen, HenryDawson
 Fleming, LesterGarden City
 Flesland, M. O.New London
 Folsom, H. H.Mpls
 Fournelle, PeterWhite Bear Lake
 Foote, P. H.St. Paul Park
 Foster, F. A.Litchfield
 Foley, P. J.Le Sueur
 Ford, Frank H.Mpls
 Fortin, G. E.Mpls
 Forbes, Wm.Winnebago City
 Foster, P. J.Triumph
 Foss, ChristianMpls
 Follett, DenisHastings
 Forgerson, G. A.Rosemount
 Fobes, E. J.Mpls
 Forbord, O.Hanley Falls
 Fowler, L. M.Waterville
 Forver, J. W. H.Berthold, N. D.
 Forster, E. H.Mpls
 Fryer, W. E.Mantorville
 Fryckberg, J. W.St. Paul
 Frederickson, S. C.Cobden
 Frost, E. B.Albert Lea
 Fritze, LeonhardClaremont
 Freeman, JonathanAustin
 Frenn, P. J.Red Wing
 Frankhauser, Chas. F.Anamoose, N. D.
 Frye, P. H.Willmar
 Fredericksen, EmilFlaxton, N. D.
 Frank, Chas.Constance
 Fry, J. J.South Shore, S. D.
 Frederickson, H. A.Windom
 Frydenlund, E. A.Rugby, N. D.
 Francis, W. C.Williston, N. D.
 Fuller, E. D.Mpls
 Fulton, Hon. T. C.White Bear Lake
 Fuller, H. A.Lake Crystal

G

Gardner, C. W.Mpls
 Gantefall, LarsHanley Falls
 Gates, A. H.Rice
 Gaarder, Peter E.Souris, N. D.
 Ganskow, Wm.Wells
 Gastfield, A. F.Duluth
 Gergen, N. B.Hastings
 Gearty, T. G.Robbinsdale
 Gerdson, HenryVictoria
 Gerth, Wm. B.Lamberton
 George, E. S.Graetlinger, Iowa
 Guster, AndrewWahpeton, N. D.
 George, L. E.Fertile
 Gehlin, Fr.Glencoe

Gedde, Geo. Nimrod
 Gervin, Theo. St. Paul
 Gilland, F. L. Excelsior
 Gibbs, F. H. St. Anthony Park
 Gill, Edward, White Bear Beach
 Gilbert, L. W. Glencoe
 Glossi, F. C. Stillwater
 Gillard, Thos. Glenville
 Gillam, W. S. Redfield, S. D.
 Gilbertson, A. Milan
 Gibbons, W. F. West Concord
 Gilman, J. E. Winnebago
 Ginder, Henry Hinckley
 Gibbs, Mrs. F. H. St. Anthony Park
 Gildersleeve, John W. Hill City
 Glycer, Alfred Forest Lake
 Gluck, C. W. Constance
 Glaeser, Jacob Owatonna
 Gjerstad, Anton Bertha
 Gneiner, Rev. John Springfield
 Goodman, D. E. Faribault
 Goltz, John Havana, N. D.
 Gotschalk, A. C. L. Janesville
 Gove, E. L. Madelia
 Goergen, Peter E. Long Lake
 Grannis, G. F. Vernon Center
 Grant, John Stacy
 Grover, C. A. Glyndon
 Green, Prof. S. B. St. Anthony Park
 Grimes, Geo. S. Mpls
 Greenfield, F. H. Balaton
 Grover, O. J. Glyndon
 Greening, C. F. Grand Meadow
 Gregory, H. Jordan
 Graves, Mrs. Wm. F. St. Paul
 Greene, M. V. Jamestown, N. D.
 Grunwald, Herman Brownsdale
 Grant, Eugene, Sr. Moorhead
 Grussendorf, Chas. Courtland
 Grein, Leonard Avoca
 Gregory, Wm. T. Hewitt
 Green, J. F. Worthington
 Greely, A. M. New Rockford, N. D.
 Greene, M. U. Jamestown, N. D.
 Grift, Peter Cambridge
 Gregor, John Hutchinson
 Gurvangel, Bennett Albert Lea
 Gynild, Rev. Willmar
 Guse, Herman Litchfield
 Gunderson, Gustav Webster, S. D.
 Gustafson, Chas. St. Hilaire
 Gustafson, E. B. Fertile
 Gulbrandson, Hans Albert Lea
 Gurney, C. W. Yankton, S. D.
 Guy, Reuben Cedar
 Guilford, C. A. Mpls
 Gunderson, E. Rugby, N. D.
 Guler, Stephen New Rockford, N. D.
 Gussendorf, Chas. Courtland
 Gulleckson, C. J. Beltrami

H

Hanson, P. H. Flaming
 Haynes, Prof. Arthur E. Mpls.
 Haseltine, E. W. Grand Forks, N. D.
 Haggard, H. Excelsior
 Hanson, C. L. Fertile
 Hawkins, A. O. Excelsior
 Hawkins, John Mpls
 Hawkes, A. S. Waseca
 Hanks, David Russell
 Hazard, R. B. Mpls
 Hanchett, W. H. Sparta, Wis.
 Hart, Frank B. Mpls
 Hazelton, D. C. Cutler
 Hays, H. G. Bemidji
 Hale, F. W. Sauk Rapids
 Hammustrom, C. J. Mpls.
 Hanson, Christian Hammond, Wis.
 Hanson, J. G. Kasson
 Hansen, C. N. Rush City

Hanson, Mrs. A. S. Mpls
 Harris, Philip St. Paul
 Harmon, Milton H. Geneva, N. Y.
 Hambleton, S. P. Grand Meadow
 Hanson, Herman Osakis
 Hannah, Robt Fergus Falls
 Hayes, Hon. W. M. Washington, D. C.
 Hatledal, O. O. Benson
 Hart, Geo. W. Lakewood, N. D.
 Hazleton, Frank H. Crookston
 Hage, Geo. Madelia
 Hastings, A. Gerled, Iowa
 Hanson, James F. Fertile
 Harley, Hugh Swan River, Man.
 Hansen, H. F. Albert Lea
 Hall, E. W. Albert Lea
 Hanson, Henry Windom
 Hankerson, G. W. Medford
 Harmer, John Claremont
 Hamlin, Alonzo Spring Valley
 Hanson, J. P. Brownsdale
 Hall, Geo. West Concord
 Haycroft, Jule Madelia
 Hanna, W. A. Mapleton
 Hahn, Adolph Madison Lake
 Hallorf, Mrs. Ellen Cologne
 Harrison, J. P. Eden Prairie
 Hanson, Henry Barry
 Halverson, Halver Hills
 Hamfeld, Geo. Fulda
 Hanson, Jens C. Westbrook
 Hanna, Jerome Hastings
 Hall, F. R. Hawley
 Hamilton, Geo. H. West St. Paul
 Hartman, Frank Minneiska
 Hagen, A. J. Hendrum
 Hagen, Ole J. Hendrum
 Hanson, J. B. Anoka
 Hanson, Lewis Constance
 Hartt, W. W. Delavan
 Harrison, J. F. Excelsior
 Hanscom, W. H. Mpls
 Hammer, M. E. Heiberg
 Hansberger, John Worthington
 Hardow, A. Worthington
 Hanson, A. L. Ada
 Hansen, H. Albert Lea
 Hazen, Edw. Duluth
 Hart, E. W. Madison, S. D.
 Hawkins, J. C. Austin
 Hawkinson, Chas. Webster, S. D.
 Harker, Jarvis Rugby, N. D.
 Hall, C. W. New Rockford, N. D.
 Haug, E. T. Haug
 Hanson, Simon J. Dawson
 Hart, Carl J. Hatfield
 Hagan, Capt. Carl Biscay
 Henneker, W. S. Mpls
 Hermunsle, L. Abercrombie, N. D.
 Hemmelgarn, Jos. B. Perham
 Helfert, E. A. Stillwater
 Heimark, J. H. Granite Falls
 Henry, W. B. Rogers
 Heimark, O. J. Clarkfield
 Herrick, A. E. Little Falls
 Hewitt, Arthur Porter
 Hendrickson, M. P. Montevideo
 Heald, W. H. Letcher, S. D.
 Hemstadt, M. A. Montevideo
 Hess, Jacob Lamberton
 Henderson, M. B. Forest Lake
 Hegdal, H. O. Belview
 Hegdal, Henry B. Belview
 Hesselgrave, R. V. Winnebago
 Hermanson, O. J. Albert Lea
 Hendrickson, Carl O. New Richland
 Heath, Rev. S. Benson
 Hendrickson, Frank Malcolm
 Healy, G. B. Sioux City, Iowa
 Henry, Earl Montevideo

Heneke, Ida Wood Lake
 Herrow, T. A. Blooming Prairie
 Hensel, Ed. New Ulm
 Heins, H. H. Los Angeles, Cal.
 Heglund, Chas. Constance
 Heaton, Mrs. Joseph Rochester
 Hector, A. Worthington
 Heins, C. A. Olivia
 Hedman, D. Lamberton
 Hegstrom, Olof Shafer
 Herzer, F. J. Edgely, N. D.
 Helmer, S. O. Buffalo
 Henderson, Gustaf Fertile
 Heath, C. C. Beltrami
 Hendricks, Oscar E. Mayer
 Hintermister, J. Henry, Jr. St. Paul
 Hillger, Rev. Aug. Boyd
 Hill, A. W. Amboy
 Highmark, L. P. West Duluth
 Hildreth, C. C. Kensett, Iowa
 Hinckley, C. N. Osseo
 Hibbs, D. R. P. Albert Lea
 Highby, L. P. H. Albert Lea
 Hilleboe, H. S. Willmar
 Hill, C. R. Canby
 Hilbert, Ferd Albany
 Higby, J. W. Mpls
 Hlgble, W. S. Eden Prairie
 Hjermstad, Hans, Balaton
 Howard, Herbert Mpls
 Horstad, O. A. Fertile
 Hoglund, O. Center City
 Holton, Theo. Larimore, N. D.
 Holzapfel, Fritz Robbinsdale
 Hoverstad, Mrs. T. A. Dennison
 Howland, Frank B. Northfield
 Holmes, R. N. Mpls
 Holmberg, O. A. Cambridge
 Hobert, E. H. Hinckley
 Horton, W. H. Alexandria
 Homme, Ole O. Heron Lake
 Hoffman, Peter Fergus Falls
 Hocke, Peter Windom
 Hoffman, E. L. Janesville
 Hoyne, A. J. Albert Lea
 Holmgren, P. O. Hoffman
 Holdahl, Olaf Roseau
 Holm, Mike Roseau
 Hovel, Dr. M. V. Montgomery
 Holtz, Paul Waseca
 Holt, John E. Carver
 Holmgren, Alfred Pennock
 Holmes, J. L. Mpls
 Holten, John Fertile
 Holtan, Ole Clarkfield
 Hopkins, A. F., Duluth
 Hoss, Mrs. N. Fertile
 Hoffman, Nils C. Maple Plain
 Hoag, G. E. Mpls
 Hummel, John A. St. Anthony Park
 Hulbert, C. S. Mpls
 Huett, Wm. Hoople, N. D.
 Huff, Theo. A. Fergus Falls
 Huston, H. A. Chicago, Ill.
 Hutchins, F. J. Huron, S. D.
 Husser, Henry Minnieska
 Hurst, John H. St. Peter
 Hurd, Geo. Albert Lea
 Hudson, J. H. Claremont
 Hutchinson, W. H. Eagle Bend
 Humphrey, W. T. Madella
 Hunt, J. J. Brownsdale
 Husting, L. P. Hastings
 Hugh, Michael M. Hastings
 Hursch, J. M. Henning
 Huglund, Hans Fargo, N. D.
 Hodgdon, Edw. A. Mpls
 Holty, G. F. Bagley
 Homar, Rev. Roman Beaulieu
 Hotz, Jacob Arcadia, Wis.

Holger, John Rushford
 Holm, Wm. Franklin
 Holmberg, N. J. Cambridge
 Hotasek, Winslow Hopkins
 Hoflin, Jos. J. Hopkins
 Hoffland, J. O. Windom
 Hoefer, Wm. Beaver Creek
 Hornby, H. C. Cloquet
 Hopkins, A. F. Duluth
 Hoyt, B. T. Hamline

Ilett, John Redwood Falls
 Innis, Rev. G. S. Hamline
 Iversen, Carl Lake Benton
 Ives, W. S. Annandale
 Ives, C. C. Pine City
 Ives, Thos. F. New Richland

Jackson, N. A. Lily, S. D.
 Jensen, T. P. Little Falls
 Jensen, Hans Franklin
 Jensen, Holger Albert Lea
 Jensen, C. M. Albert Lea
 Jensen, Jens A. Rose Creek
 Jenness, B. F. Willmar
 Jeffers, Geo. Windom
 Jensen, Adolph Mpls
 Jensen, Christen Waupaca, Wis.
 Jespersion, N. P. Minnetonka Beach
 Jager, H. J. Owatonna
 Janney, T. B. Mpls
 Jarvis, Chas. C. Mora
 Jacobson, P. G. Madison
 Jackson, Peter Cloquet
 Janson, C. J. Lafayette
 Jack, Nathan Blakeley
 James, Geo. W. Forest Lake
 Jasperson, L. W. Albert Lea
 Jacobson, M. E. Madison
 Jarchow, Geo. Stillwater
 Jacobson, Niels Hills
 Jarhn, Aug. Springfield
 Jackson, Adolph McIntosh
 Jacobson, Elias Montevideo
 Jacobson, Olaf Montevideo
 Jensen, Peter Milaca
 Jensen, Hans P. Erwin, S. D.
 Jensen, Andrew P. Mpls
 Jefferson, Miss Lucy E. Bingham Lake
 Jensen, E. P. Montevideo
 Jensen, A. S. Flaxton, N. D.
 Jensen, Anton McIntosh
 Johnson, B. G. Granite Falls
 Johnson, Ernest St. Cloud
 Johnson John Ad. Hector
 Johanson, J. P. Excelsior
 Johanson, Olof Bricelyn
 Johnson, P. G. Lake City
 Johnson, A. J. Manfred, N. D.
 Johnson, Carl E. Pelican Rapids
 Jones, W. H. Osseo
 Johansen, Jorgan Tyler
 Jones, John D. Platteville, Wis.
 Johnson, John Danube
 Johnson, Dr. A. E. Cloquet
 Joyce, John R. Grand Meadow
 Johnson, David Kasota
 Johnson, Walter E. St. Peter
 Johnson, J. E. Benson
 Johnson, F. O. Sacred Heart
 Johnson, S. S. Waseca
 Johnson, J. C. Waseca
 Johnson, Gust J. Clarissa
 Johnson, Chas. L. Audubon
 Jones, S. Duluth
 Jones, John P., Swan River, Man.
 Johnson, T. Hills
 Johnson, J. G. Cologne
 Johnson, Bernt Westbrook

Jorgenson, I. B. Hutchinson
 Johnson, Jense J. Windom
 Jones, Thos. C. Russell
 Johnson, P. J. Constance
 Johnson, A. W. Constance
 Johnson, Fred Constance
 Johnson, Sam Constance
 Johnson, Emil Constance
 Johnson, L. M. Constance
 Johnson, Gust Constance
 Johnson, J. A. Waseca
 Johnson, George Worthington
 Johnson, H. G. Dassel
 Jung, Jacob Perham

K

Kahle, Martin St. Paul
 Kauth, Jacob Robbinsdale
 Katzner, Rev. Jno. B. Collegeville
 Kaplan, E. S. Owatonna
 Kaer, N. C. Mpls
 Karels, Joseph Ortonville
 Kanning, Ernest Fairmont
 Kanning, D. F. Fairmont
 Kappahahn, Gustavus Alexandria
 Kankel, Chas. O. Terrebonne
 Kalberg, B. J. Hector
 Kately, Lucius Sherburne
 Kennedy, J. W. Lake City
 Kennedy, Dan Biscay
 Keays, A. W. Elk River
 Kettle, Jacob Osakis
 Key, C. L. St. Peter
 Kennedy, J. H. Sheyenne, N. D.
 Keasling, F. J. Zimmerman
 Keys, E. A. Excelsior
 Keen, C. G. New Richland
 Kendall, J. J. St. Paul
 Ketcheson, Melville Milnor, N. D.
 Kellogg, L. L. Janesville, Wis.
 Keyes, Miss Nellie Wayzata
 Kelly, H. Kellys, N. D.
 Keith, John Bayfield, Wis.
 Kingsbury, Mrs. Anna B. St. Paul
 Kidler, Chas. Bellingham
 King, Louis Excelsior
 Kinkade, W. S. Sioux Falls, S. D.
 Kinney, John Waterville
 Kimball, F. W. Austin
 Kiser, G. A. Morristown
 Kilen, A. A. Fertile
 Kirchner, Alois Fulda
 Kinghorn, W. A. Rogers
 Kinduller, Carl D. Rugby, N. D.
 King, Carroll D. Minaken, N. D.
 Kjerland, O. N. Northwood, Ia.
 Kjorstad, G. H. Starbuck
 Kling, W. P. Cambridge
 Klussman, E. C. Welcome
 Klent, Rev. H. Raymond
 Klaksvik, Iver S. Underwood
 Klauser, H. Litchfield
 Kloss, F. St. Peter
 Kleberg, John Willmar
 Klevan, Paul E. Starbuck
 Klug, Nicholas R. Caledonia
 Klebs, J. C., Jr. Caledonia
 Knudsen, Kittel Hartland
 Knuppel, Fred Billings
 Knowles, Mrs. M. A. Excelsior
 Knudson, Rev. P. New Duluth
 Knutson, Paul Fertile
 Knutson, O. C. Canby
 Knudsen, A. C. Westbrook
 Korsmo, Soren A. Franklin
 Kolisch, Aug. St. Louis Park
 Kovar, Wansel Owatonna
 Kording, John Hayfield
 Kolbert, John Mankato
 Kolasky, Geo. W. Mpls

Koehler, Detrick Hector
 Kruger, John Stillwater
 Kroll, John Lake Benton
 Kraling, O. M. Wykoff
 Kruger, Mrs. A. C. Eden Prairie
 Krogman, Henry Crookston
 Krat, John V. Lakefield
 Kronschnabel, G. Fertile
 Krog, Jens H. Lake Benton
 Kreuger, W. F. Niagara, N. D.
 Kroeker, H. N. Mountain Lake
 Kughman, Rudolph Heron Lake
 Kurtz, John J. Buchanan, N. D.
 Kuehl, Wm. Wabasso
 Kough, Thos. Taopi
 Korista, J. S. Silver Lake
 Kromstadius, H. A. Hoffman

L

Larson, A. F. Moorhead
 Lavours, John Mpls
 Lamotte, Ed. Deehr, N. D.
 Lathrop, K. E. Hugo
 LaMont, Scott Jarretts
 Laflin, B. F. Osseo
 Lake, A. H. Black River Falls, Wis.
 Lang, Wm. Owatonna
 Larson, John S. St. Anthony Park
 Lane, E. M. Osakis
 Lamb, Chas. Baker
 Latta, Walter Crookston
 Larson, L. N. Lowry
 Laonard, A. Belview
 Larson, Christ M. Albert Lea
 Larson, Arthur W. Albert Lea
 Lambert, R. R. Rush City
 Lano, A. Excelsior
 Larson, A. G. Waseca
 Larson, Jalmar Spicer
 Lapher, Chas. E. Montevideo
 Lamp, G. B. Mapleton
 Larson, Alfred Winthrop
 Lampert, Jas. Fairmont
 Lawe, J. W. Fairmont
 Larson, L. F. Westbrook
 Larson, Leonard Isanti
 Lane, C. W. Mpls
 Larson, Peter Albert Lea
 Larson, J. C. Ellendale
 Larson, L. St. James
 Larson, Iver Madison
 Larsen, C. F. Morgan
 Larson, L. A. Rugby, N. D.
 Lanik, Elif J. Rugby, N. D.
 Laursen, Martin Sorkness, N. D.
 Larsen, Nels P. Carpio, N. D.
 Lagenecker, Rev. G. N., La Follette, N. D.
 Larson, Peter New Rockford, N. D.
 Lange, Fred Sargent
 Lamp, Albert Springfield
 Lake, D. S. Shenandoah, Ia.
 Lentz, A. H. Mankato
 Leach, A. D. Excelsior
 Leath, Fred Cleveland
 Leavenworth, F. P. Mpls
 Ledman, V. B. Miller, S. D.
 Lester, Erwin Alpha
 Lennon, T. P. Starbuck
 Lepine, W. E. Welcome
 Lee, H. J. Blooming Prairie
 Lee, Henry T. Fingal, N. D.
 Lee, Martin G. Hendrum
 Lee, G. C. Minneota
 Leonard, Mrs. E. A. Spring Valley
 Leibold, F. New Ulm
 Leslie, C. E. Harrington, N. D.
 Lee, Geo. F. Hanska
 Leverson, Gust Brooten
 Lewis, R. J. St. Paul
 Levold, E. J. Mpls

Lewis, K. W. Minong, Wis.
 Lewis, Gerhard Adrian
 Lindberg, B. O. Beltrami
 Lindstrom, A. Westbrook
 Lindberg, Chas. Dassel
 Lietz, L. Dover
 Lindley, Clarkson, Mpls
 Lincoln, G. A. Worthington
 Lindholm, C. J. Mpls
 Liebbrandt, Jacob Jordan
 Lindsay, Jas. M. Austin
 Lindley, Isaac Amboy
 Livingstone, F. A. St. Peter
 Livingstone, R. C. Spring Valley
 Lindsay, F. F. Mpls
 Lilleskov, John Stanton
 Littfin, Leonard Winsted
 Lien, Harry A. Montevideo
 Lisland, K. W. Sebeka
 Linnell, C. W. Center City
 Lindberg, And. Scandia
 Lindquist, John Granite Falls
 Lizotte, John Omemee, N. D.
 Logering, Aug. Long Prairie
 Loy, W. G. Mpls
 Longfellow, L. Mpls
 Lokki, Martin Grand Meadow
 Lofgren, L. Ulen
 Locke, A. W. Dodge Center
 Long, F. B. Mpls
 Lohn, Lewis Fosston
 Long, L. R. Round Lake
 Lowe, L. H. Clotho
 Longyear, E. J. Excelsior
 Long, A. G. Excelsior
 Lowe, J. W. Fairmont
 Lovold, E. J. Mpls
 Looker, G. Carlos
 Lundgren, E. Isanti
 Luce, Clint Albert Lea
 Lund, Alfred Barrett
 Lubker, Christ Montevideo
 Lundholm, E. M. St. Paul
 Lundblad, Peter Hopkins
 Lumberg, Fred Mapleton
 Luchan, H. J. Fertile
 Lykken, C. T. Dennison
 Lucken, K. J. Portland, N. D.
 Lundberg, Theo. A. Belle Plaine

M

Maloney, Richard Henderson
 Manning, J. R. Booge, S. D.
 Marin, W. A. Crookston
 Mattfeld, Henry Cologne
 Mareck, Titus Mpls
 Malmberg, E. W. Lafayette
 Malmberg, P. B. Warren
 Magnusson, Sven Harris
 Mathisen, Geo. W. Windom
 Marsten, L. W. Adrian
 Mager, Victor Winnipeg, Man.
 Mather, O. R. Madelia
 Manske, Fred Mankato
 Masee, A. W. Albert Lea
 Mann, C. O. Owatonna
 Madden, T. E. Waseca
 Madden, J. Killkenny
 Magnusson, S. E. Willmar
 Marion, C. Villard
 Magie, Dr. W. H. Duluth
 Mattson, C. A. Scandia
 Mayon, J. A. Stewartville
 Malakonsky, John Lockhart
 Manderfelt, Jno. New Ulm
 Marso, J. P. Canby
 Mack, Wm. Belview
 Mainz, Simon Hastings
 Marks, F. C. Marshall
 Manderfeld, Henfy New Ulm

Maschger, A. F. St. Paul
 Madson, Henry Madelia
 Mann, M. P. Worthington
 Martenson, R. J. Tyler
 Marsh, F. L. Champlin
 Maakstad, C. P. Knox, N. D.
 Magnusson, C. M. Knox, N. D.
 Mansfield, Chas. A. Williston, N. D.
 Martin, John, Lumber Co. St. Paul
 Mayer, H. C. Mpls
 Malmsten, Frank W. Mpls
 Martin, E. E. Claremont
 Martel, Dr. Ovide Young America
 Melvin, J. M. Excelsior
 Merritt, C. W. Winona
 Meyer, Henry Blue Earth
 Meyer, O. T. Fairmont
 Melgaard, O. L. Argyle
 Menten, F. B. Kasota
 Mesenberg, Matt St. Cloud
 Mesenberg, Frank St. Cloud
 Mead, Scott, Windom
 Menton, P. W. Eagle Lake
 Mellgren, J. L. Cologne
 Melby, H. Sherburne
 Meyer, W. C. Springfield
 Meierding, Henry Springfield
 Merrill, H. L. Hutchinson
 Melvin, Miss Luella Chaska
 Mills, G. R. Buffalo
 Miller, E. B. Mpls
 Miller, J. K. Sauk Rapids
 Mighton, S. R. Winnipeg, Man.
 Mills, W. E. Lac qui Parle
 Mitchell, D. M. Owatonna
 Mills, R. W. Litchfield
 Mills, L. D. Lake Crystal
 Mitchell, Mrs. M. M. Mpls
 Minsaas, E. O. Montevideo
 Miller, C. F. Faribault
 Mikelson, Peder Hazel Run
 Millard, F. B. Willow River
 Miller, J. A. Luverne
 Miller, H. J. Cologne
 Miller, S. O. Lakeville
 Minen, D. New Rockford, N. D.
 Miller, E. J. D. Barlow, N. D.
 Miller, Chester Jamestown, N. D.
 Minnick, Chas. Atwater
 Miner, J. E. Excelsior
 Motz, Chas. Rosemount
 Moyer, L. R. Montevideo
 Moll, Conrad Sleepy Eye
 Mohl, Fred Adrian
 Moeser, Frank Minnetonka
 Mowberg, John Scandia
 Moen, H. H. Beaton
 Moede, W. Buffalo Lake
 Moore, O. W. Spring Valley
 Morgan, H. L. Bradley, S. D.
 Morton, R. Lamberton
 Moehlenbrock, Edw. Owatonna
 Monson, O. M. Belview
 Morin, W. A. Albert Lea
 Morley, J. R. Owatonna
 Moore, G. H. Stockton
 Monson, Jonas Willmar
 Moulton, H. R. Windom
 Morse, Harry Beaver Creek
 Moe, C. Hills
 Morrison, C. E. Montevideo
 Moklev, M. S. Battle Lake
 Moore, Stanley Worthington
 Mowlin, J. T. Jamestown, N. D.
 Moore, Miss Flora E. Mpls
 Moehlenbrock, Carl Owatonna
 Morin, F. E. Atwater
 Moore, Geo. C. Detroit
 Murray, J. W. Excelsior
 Murray, Mrs. Emma Excelsior

Muckle, H. A. Merriam Park
Murray, Rev. D. C. Blooming Prairie
Murphy, J. E. Bowbells, N. D.
Murray, A. Wadena
Murray, J. B. Marshall
Mueller, Ferdinand Park Rapids
Mullin, P. T. Hutchinson
Myckleford, O. R. London

Mc.

McCoy, Michael Dexter
McConachie, M. Perham
McCarthy, Mrs. T. Elkton, S. D.
McCurdy, J. B. K. Madelia
McCarty, Ed. Madelia
McCarty, B. K. Madelia
McAdams, S. H. Sanborn
McGuire, S. H. Annandale
McCrady, M. F. Owatonna
McGenough, Bernard Kilkenny
McCarty, Jas. Madelia
McGowan, D. West Concord
McDonald, C. E. Owatonna
McConnell, W. W. P. Mankato
McGaun, John Pine City
McCabe, B. S. Le Sueur Center
McDonald, H. J. Rugby, N. D.
McKay, Geo. F. Holyoke
McCain, W. A. Blanchard, N. D.
McKibbin, Joseph St. Paul
McKellar, P. D. Jackson
McGuire, A. J. Grand Rapids
McKisson, G. D. Fairmont
McLeran, F. B. Wrenshall
McLain, J. A. Amboy
McLaughlin, W. J. Owatonna
McRostie, Mrs. J. H. Owatonna
McDonald, J. A. Owatonna
McKusick, Mrs. Herbert Stillwater
McMackin, Geo. Madelia
McLaughlin, W. W. Madelia
McKeon, Jas. Luverne
McPhail, Malcolm Clandeboye, Man.
McIntosh, Mrs. Elizabeth Beaulieu
McLeran, J. B. Duluth
McMartin, D. L. Claremont
McKenzie, Mrs. Anna Hutchinson
McHenry, Rev. Herbert Rugby, N. D.
McMurrin, Mrs. Elinore M. St. Paul
McMartin, F. B. Claremont
McIntyre, S. B. Mpls

N

Naplin, Oscar Wylie
Nelson, Geo. E. Heron Lake
Nelson, Peter Red Wing
Nelson, A. P. Maynard
Nettling, John Montevideo
Nelson, Alex Montevideo
Nelson, Oscar Deerwood
Nelson, Martin Constance
Nealy, W. Deer Creek
Nelson, Peter E. Montevideo
Nelson, N. P. St. James
Nelson, Helge Raymond
Nelson, Nels J. Hills
Nelson, S. G. Vernon Center
Nelson, C. G. Lindstrom
Nelson, John Kerkhoven
Nelson, O. L. Wayzata
Nelson, N. A. St. Hilaire
Nelson & Skogan Bagley
Nelson, Geo. S. Foxleigh, Sask. Can.
Nelson, N. Alfred Litchfield
Nestlar, A. J. Flaxton, N. D.
Newenschwender, D. Fessenden, N. D.
Nelson, Hans Fergus Falls
Neseth, T. H. Fertile
Nelson, C. N. Amo
Nelson, Iver Cottonwood
Nellemor, T. A. Sacred Heart

Nellar, Martin, Mapleton
Nelson, O. M. Chicago, Ill.
Neish, T. L. Carlyle, Sask.
Nielson, Geo. Braham
Niles, Fred A. Cedar Rapids, Iowa
Nicol, J. I. Yellow Grass, Sask.
Nieman, Chas. Hamburg, Wis.
Nilson, Ener Fertile
Nielson, Soren Albert Lea
Nelson, Oscar, Grandy
Nelson, Albert S. Westbrook
Nilssen, Robt. Morgan
Nielson, John Ortonville
Norby, A. Madison, S. D.
Northam, Chas. Mpls
Nott, F. G. Howard Lake
Norman, Adolph Spicer
Noble, D. A. Windom
Nordberg, A. J. Starbuck
Nordstrom, W. A. St. Paul
Novating, Jos. Elysian
Noyes, W. H. Owatonna
Noble, J. W. Knox, N. D.
Northrup, J. E. Mpls
Noerinberg, Fred Cascade Springs, S. D.
Nvdahl, J. L. Mpls
Nystrom, Gust. Worthington
Nutter, F. H. Mpls
Nurnberger, Geo. L. Foxholm, N. D.
Nuffer, Geo. W. Hills
Nyberg, John Milaca
Nygvest, Gust. Fertile

O

O'Brien, Thos. Kilkenny
Oehmen, M. Robbinsdale
Ogilvie, Jas. Blue Earth
Ohman, Fred West St. Paul
Ohm, Richard Gully
Ohm, F. H. Mapleton
Ohloff, Chas. Postville, Iowa
Oksendahl, Andrew H. Rugby, N. D.
Oldenburg, H. F. Henderson
Olson, John Braham
Oleson, C. E. Perley
Olsen, Andrew Ashby
Olson, H. B. St. Louis Park
Older, C. E. Luverne
Oleson, Michael Montevideo
Olmanson, O. A. Traverse
Olson, John D. Willmar
Olson, C. A. Willmar
Olafson, Jens Madelia
Olston, C. M. Marshall
Olsund, O. N. Beltrami
Olson, N. A. Otisville
Olsen, L. H. Mpls
Olson, E. S. Wheaton
Olney, Will Knox, N. D.
Oleson, M. A. Williston, N. D.
Olson, Ole A. Atwater
Omland, Erick McIntosh
Onstad, Ole P. Maplebay
Ongstad, H. H. Pelican Rapids
Opheim, Andrew Fertile
Opsahl, A. H. Mpls
Oppegaard, E. O. Sacred Heart
Ordway, L. P. St. Paul
Odalén, Ole Kenyon
Orton, C. J. Marietta
Osborn, John Dassel
Ostron, Theo. Nicollet
Osteen, L. N. Montevideo
Osmundson, G. New London
Oswoll, Rev. S. N. Toronto, S. D.
Overgaard, P. H. Albert Lea
Oppegaard, E. A. Twin Lakes
Opheim, Knut Fertile
Owen, S. M. Mpls
Orth, F. W. Morton
Owldal, Iver Berwich, N. D.

P

Parkhill, R. Rochester
 Pauly, Nic. Chanhassen
 Parks, J. S. Amboy
 Patten, H. G. Charles City, Ia.
 Parker, W. L. Farmington
 Palmer, F. C. Wanbay, S. D.
 Patten, J. W. Long Lake
 Pabody, E. F. Mpls
 Palmer, W. A. Hettland, S. D.
 Page, Leslie Pleasant Grove
 Payne, Capt. S. D. Kasota
 Paulsrud, Hans Fertile
 Palmer, J. W. Madelia
 Partridge, N. O. Owatonna
 Palmer, Wm. H. Brownsdale
 Paulsin, John Windom
 Palleson, P. Osakis
 Paulson, Bertha Steen
 Paulson, H. M. Steen
 Parten, John A. Mpls.
 Parker, M. Manly, Iowa
 Paulson, G. C. Elbow Lake
 Paine, C. J. Brewster
 Parson, N. Northfield
 Paulson, Ole. Fero, N. D.
 Pattner, Chas. New Rockford, N. D.
 Parks, W. S. Amboy
 Perry, P. H. Excelsior
 Peterson, Wm. A. Yuma, Arizona
 Pendergast, R. H. Duluth
 Peterson, F. J. Waconia
 Peterson, Elvin L. St. Anthony Park
 Perkins, T. E. Red Wing
 Peterson, Jos. Lake Crystal
 Perry, Geo. Farmington
 Peterson, Geo. R. Collis
 Penning, Martin. New Ulm
 Peterson, K. K. Rothsay
 Peterson, Andrew. Fertile
 Peterson, Alex. J. Hinckley
 Peterson, Paul C. Flaxton, N. D.
 Peterson, O. M. Albert Lea
 Pederson, P. A. Benson
 Pederson, H. C. Hopkins
 Peterson, P. H. Atwater
 Pettis, H. E. Kasota
 Peter, Carl. Janesville
 Peterson, Lyle E. Belview
 Peterson, Andrew. Belview
 Pederson, O. O. Harmony
 Person, E. S. Zumbrota
 Peterson, V. C. Renville
 Peterson, H. A. Sacred Heart
 Persons, C. O. Dundas
 Perot, Francis. Mpls.
 Pearson, Louis. Robbinsdale
 Pfeiffer, Rev. Chas. Long Prairie
 Pfaender, Wm. Jr. New Ulm
 Pfister, John M. Marietta
 Pfaender, Max. St. Paul
 Pfeiffer, Fred. Morton
 Phelps, G. H. Mapleton
 Pinkert, Paul. Milbank, S. D.
 Pineo, W. B. Mpls.
 Plows, Featherstone Finlayson
 Potter, A. H. Mpls.
 Poussin, G. W. Onigum
 Pond, E. R. Mpls.
 Powell, F. W. Willmar
 Polkow, Herman. Springfield
 Pope, F. L. Windom
 Pohlman, C. W. Lakefield
 Powers, T. S. Grand Rapids
 Porter, M. S. Windom
 Probstfield, R. M. Moorhead
 Pray, J. W. Mpls.
 Prasser, Ernest M. Gully
 Pengilly, Jas. Shakopee
 Peterson, N. Detroit
 Peterson, C. O. Willmar
 Peiffer, Rev. N. J. Eden Valley

Penny, John. Centuria, Wis.
 Pew, C. R. Fairmont
 Peterson, Jno. Alf. Chisago City
 Peterson, Peter. Westbrook
 Pederson, A. W. Comfrey
 Pederson, Paul. Constance
 Peterson, J. A. Constance
 Peterson, Guner. Fairfax
 Pettes, Chas. C. Madelia
 Peavoy, Harris. Redwood Falls
 Peterson, P. J. Maple Plain
 Peterson, Carl F. Storden
 Peterson, C. F. Renville
 Peltier, C. D. White Bear
 Peterson, Chas. Esmond, N. D.
 Petry, S. S. Berthold, N. D.
 Peabody, Geo. F. Carrington, N. D.
 Pendvay, Thos. Jamestown, N. D.
 Peterson, Chas. W. Clear Lake, S. D.
 Peterson, C. J. Astoria, S. D.
 Peterson, John A. Dawson
 Putman, Mrs. T. N. Carrington, N. D.

Q

Quist, M. P. Nicollet
 Quiring, J. J. Mountain Lake
 Quammen, Chr. Boyd
 Quammen, K. Velva, N. D.

R

Rankin, A. W. Mpls.
 Ray, Mrs. J. W. Mpls.
 Raines, John. Campbell
 Rackliff, Geo. Annandale
 Rasmusson, Hans. Owatonna
 Ray, Geo. E. Elysian
 Rasmusson, E. R. Svea
 Rains, Dr. J. N. Willmar
 Randan, Gilbert. Hoffman
 Rasche, G. T. Westbrook
 Rainy, Wm. Welcome
 Radabaugh, A. C. Mpls.
 Redpath, Thos. Wayzata
 Rennike, Ernest A. Arlington
 Reynolds, Prof. M. H. St. Anthony Pk.
 Reed, E. J. Mapleton
 Reynolds, Mrs. W. D. Mpls.
 Reichard, David. Eden Prairie
 Revier, Chas. St. Peter
 Reed, Capt. A. H. Glencoe
 Rentz, Fred J. Morris
 Reese, H. B. Le Sueur
 Reeder, G. S. Sauk Rapids
 Rennacker, Chas. J. Detroit
 Rentchler, J. M. Lakefield
 Reed, S. J. Webster, S. D.
 Read, T. M. Excelsior
 Reil, John H. Brownston
 Rea, John. Williston, N. D.
 Reichert, C. W. Carrington, N. D.
 Reimers, Henry. Bordulac, N. D.
 Rhoads, C. A. Blooming Prairie
 Rhorer, S. B. Morristown
 Richardson, Ira E. St. Anthony Park
 Ritchie, Leroy. Annandale
 Rider, Joseph. Clouet
 Richardson, S. D. Winnebago City
 Ridgway, A. M. Annandale
 Rice, Geo. E. Buffalo
 Richter, Jos. Jordan
 Ritter, C. H. Plainview
 Rice, Geo., Jr. Madelia
 Ringle, H. L. Sanborn
 Rice, F. O. Northfield
 Rice, Carl J. Peever, S. D.
 Ridges, Ruth B. Excelsior
 Ringuette, Chas. Jamestown, N. D.
 Ringness, I. O. New London
 Rixon, Chas. St. Louis Park
 Robertson, Prof. Wm. Crookston
 Robinson, Reuben. Champlin
 Rowell, H. H. S. Mpls.
 Rongen, L. J. Fertile

Rohann, Mrs. M. A. Mpls
 Rowe, Chas. Maple Plain
 Romberg, Frank Sleepy Eye
 Rotegard, A. New Richland
 Ronicker, J. St. Paul
 Rosten, Albert. Starbuck
 Roche, Morris. Royalton
 Rockwood, Eli. Madelia
 Ronning, N. N. Mpls.
 Rogness, Nels. Hills
 Rollof, Fred. New Ulm
 Roed, O. J. Fertile
 Rowell, L. Farmington
 Robbins, C. N. Le Sueur Center
 Rosenwald, J. F. Madison
 Rosengren, Fr. A. Lowry
 Rudisill, Jacob. Foreston
 Ruff, Mrs. De Witt C. St. Paul
 Ruggles, A. G. St. Anthony Park
 Rustad, Elmer. Hendrum
 Russell, J. A. Rice
 Russell, S. W. Sandstone
 Ruble, Chas. H. Albert Lea
 Russell, E. B. Mpls.
 Ryan, Timothy. Minnetonka
 Ryden, Ed. Lafayette
 Ryding, A. P. Rugby, N. D.

S

Saunders, Robt. C. Pine City
 Sandvig, Halvor. Brooten
 Sargent, C. A. Red Wing
 Sampson, C. W. Excelsior
 Sahler, Emil. Waseca
 Sandrock, Wm. Rushford
 Sanders, Chas. Owatonna
 Sandager, Julius. Belview
 Saueressig, W. A. Anamoose, N. D.
 Sartell, Mrs. Jos. St. Cloud
 Savage, D. R. Windom
 Santo, Hans. Hills
 Sanford, Edw. R. St. Paul
 Sangren, Hans. Henning
 Saterlie, G. M. Rugby, N. D.
 Saunders, Wm. Robbinsdale
 Schuneman, Mrs. Albert. St. Paul
 Schultz, Miss Emma M. Sleepy Eye
 Schoenfelder, R. O. Fairfax
 Schlemmer, Aug. Chisago City
 Scott, Wm. Lake Wilson
 Schiebe, Chas. Minnetonka
 Schutz, R. A. Le Roy
 Schain, O. P. Lamberton
 Schmidt, Edw. Mankato
 Scofield, J. D. Mpls.
 Schroeder, C. L. Grand Meadow
 Schroeder, John. Grand Meadow
 Schotzko, F. E. Springfield
 Schmider, Rev. J. Springfield
 Schneider, Henry. St. Peter
 Schaub, Jacob. Anoka
 Schafer, B. Owatonna
 Scott, C. S. New Richland
 Schneider, H. W. Claremont
 Schmit, Julius. Nicollet
 Schroeder, F. A. Echo
 Schrupp, Lawrence. Wood Lake
 Schmidt, Casper. Eden Valley
 Schallinger, Carl. Hutchinson
 Scott, John A. Hills
 Schuldt, Fritz. Lakefield
 Scherer, John E. Canby
 Scherlie, H. A. Dundee
 Schultz, W. F. Montevideo
 Schultz, John J. Sleepy Eye
 Schurb, Frank. Minneiska
 Schulte, Frank. Eagle Lake
 Seiler, John M. Excelsior
 Seiter, H. F. Tracy
 Seiter, Wm. St. Peter
 Setzer, P. Blooming Prairie
 Selvig, C. C. Willmar
 Seilset, Albert. Canby

Severson, Sam. Constance
 Severson, Alfred. Constance
 Severson, Tom M. Constance
 Sebbert, Mrs. J. H. Annandale
 Seastrand, E. Sheyenne, N. D.
 Seldon, Fred. Woodstock
 Shaub, W. W. Arnold
 Shepley, F. M. Farmington
 Shuman, H. W. Excelsior
 Shaw, Prof. Thos. St. Anthony Park
 Shave, A. S. Hawley
 Shattuck, B. U. Whalan
 Share, J. O. Albert Lea
 Shurson, S. O. New Richland
 Sherman, Henry. Windom
 Shelly, T. E. Hanska
 Shannon, Robt. Annandale
 Sherlock, Jas. B. Steele, N. D.
 Simpson, Hon. David F. Mpls.
 Simmons, Harold. Howard Lake
 Simpson, Rev. W. Condie, Sask. Canada
 Simmons, A. W. Forest Lake
 Simmons, W. J. Forest Lake
 Simons, B. Waseca
 Siewert, C. E. Hopkins
 Siles, D. M. Winnebago City
 Simonson, John. Constance
 Simpson, Geo. C. Northfield
 Sinclair, C. E. Mpls.
 Skinnemoen, Ole. Wendell
 Skoglund, W. L. Chicago, Ills.
 Skaar, N. O. Zumbrota
 Skotterud, E. O. Dawson
 Skytte, C. J. St. Paul
 Skinner, Frank. Albert Lea
 Skrivseth, L. T. Russia
 Skrel, T. H. Glyndon
 Sly, S. L. Jordan
 Sloan, F. G. Ellendale
 Slater, Richard. White Earth, N. D.
 Smith, W. H. Farmington
 Smith, E. A. Lake City
 Smith, Mrs. Abigail. Odessa, N. D.
 Smith, Lyman S. Wayzata
 Smith, D. C. Winnebago
 Smith, R. W. Lake Park
 Smith, T. C. Lakeville
 Smoke, C. E. Stockton
 Smith, John R. Waterville
 Smith, Hon. John Day. Mpls
 Smith, W. H. Madison
 Smuden, Gulic C. Hills
 Smith, R. L. Stiel. Sanborn
 Smith, J. A. Fulda
 Smith, L. A. Montevideo
 Smith, Mrs. Anna B. Mpls.
 Smith, Geo. J. La Follette, N. D.
 Smith, T. T. Redlands, Cal.
 Snyder, Prof. Harry. St. Anthony Park
 Snyder, C. E. Preston
 Snyder, C. Adrian
 Sohberg, Dr. O. St. Paul
 Sonderson, O. Spicer
 Sorenson, S. Buena Vista
 Sommers, John C. Northfield
 Sostrom, Nel. Rugby, N. D.
 Spear, Everett. Northfield
 Spates, S. R. Markville
 Spickerman, C. W. Excelsior
 Sprung, H. F. Ada
 Sperry, A. H. Willmar
 Sprague, E. W. Excelsior
 Sprague, Clifford. Madelia
 Sprague, John M. Mapleton
 Specht, F. H. Springfield
 Spielmann, A. E. Springfield
 Sprague, E. C. Madelia
 Sprague, Mrs. L. E. P. Mpls.
 Stone, Mrs. Geo. C. Duluth
 Stone, Mrs. Robt. C. Stillwater
 Stern, A. H. St. Paul
 Stockwell, S. A. Mpls.
 Stein, John. Cokato

Strander, C. C. Crookston
 Steffen, Wm. Parkers Prairie
 Stephen, Ezra F. Crete, Neb.
 Stitzel, O. J. Hewitt
 Strandness, Lamar. Lowry
 Stone, Eli. Excelsior
 Steller, G. F. Excelsior
 Street, A. H. Albert Lea
 Stenstrum, Rev. L. P. Elizabeth
 Steen, John. Triumph
 Steffens, C. H. Racine
 Stevens, H. W. Loman
 Stevens, J. O. Hanley Falls
 Stevenson, A. P. Nelson, Man.
 Staring, S. S. Mpls.
 Stromselth, O. N. Starbuck
 Stoin, Arme. Starbuck
 Street, B. G. Hesper, Iowa
 Street, Chas. Beltrami
 Stromberg, Christian. Nerstrand
 Strom, Otto. Murdock
 Stromberg, Oscar. Lindstrom
 Stoft, J. Mpls.
 Steiner, John. Avoca
 Strommer, Andrew. Montevideo
 Stanley, D. B. Kimball
 Stenstrum, John. Dunnell
 Stewart, M. W. London
 Stout, W. H. Osseo
 Stensrud, Ole. Watson
 Stenger, Rev. P. Zealand, N. D.
 Stone, E. J. Hutchinson
 Stevens, G. T. Osakis
 Stiles, Chauncey. Pleasant Lake, N. D.
 Stephens, Robt. Rugby, N. D.
 Stoen, Michael A. Rugby, N. D.
 Styrlund, David. Strip
 Storla, H. H. Lehr, N. D.
 Stryker, J. E. St. Paul
 Stevenson, T. W. Mpls.
 Sundberg, Chas. A. Worthington
 Svor, Ole R. Swift Falls
 Sveen, M. J. Brackett, N. D.
 Svenson, A. T. Fertile
 Swanson, C. E. Cannon Falls
 Sweet, A. W. Litchfield
 Swan, J. W. Presho, S. D.
 Swenson, Albert. Chisago City
 Swenson, John. Scandia
 Swenson, Chas. Braham
 Swedberg, J. S. White Bear Lake
 Swanson, Chas. V. Hinckley
 Swenson, Swen S. Lamberton
 Swain, Chas. T. Hinckley
 Swenson, Gunder. Norway Lake
 Swanson, C. W. Lafayette
 Swedberg, O. E. Fergus Falls
 Swanson, H. N. Minnetonka
 Sydow, Rich. Sandborn
 Synoground, N. O. P. Groton, S. D.
 Swedberg, J. E. Underwood
 Sweet, C. R. Fairmont
 Swenson, Ole. Westbrook
 Swenson, A. E. Watson
 Swanson, N. P. Murdock
 Sween, O. M. Wegdahl
 Swenson, Theo. Isanti

T

Tanner, U. Cannon Falls
 Taber, Wm. Duluth
 Taylor, W. L. Howard Lake
 Talcott, Mrs. A. L. Westbrook
 Telgen, Geo. Lowry
 Tessem, B. M. Starbuck
 Temple, V. D. Morristown
 Tew, D. J. Rushford
 Thompson, O. C. Albert Lea
 Thielman, Geo. Excelsior
 Thompson, E. H. Excelsior
 Thompson, F. S. Mpls.
 Thygeson, N. M. St. Paul
 Thompson, R. C. Langdon

Thorston, F. Garden City
 Thorp, L. S. Hillsboro, N. D.
 Thom, R. C. Owatonna
 Thompson, S. J. St. James, Man.
 Thompson, T. C. Hazel Run
 Thedda, John F. West Concord
 Thompson, A. E. Mpls.
 Thomasson, Eric. Wegdahl
 Thomson, S. J. Sheyenne, N. D.
 Thompson, Christ. Franklin
 Thoostenson, L. O. Hawley
 Thoe, Ed. O. Lily, S. D.
 Thomas, G. M. Williston, N. D.
 Thurston, Frank. Madelia
 Thomson, John B. Carlton
 Tingley, W. J. Withrow
 Tierney, J. E. St. Paul
 Tillotson, Mrs. H. B. Eureka
 Tousignant, Denery. Mendota
 Torgerson, Theo. St. Joseph, Wis.
 Tomalin, W. H. Kildonan, Man.
 Tollerson, Theo. Madelia
 Tollefson, Tollef. Hanley Falls
 Tompte, L. A. Sacred Heart
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 Veseth, E. M. Etter
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 Wachlin, Wm.Faribault
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Z

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 Ziebarth, L. J.Osseo
 Zachmann, Frank... St. Michael Station
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 Teigland, J. L. Minneota
 Terry, Alfred Slayton
 Thomas, A. A. Dayton, Ohio
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Jewett, R. H. L.	St. Paul.	Oxford, Wm.	Freeburg
Lord, O. M.,	Minnesota City	Mendenhall, R. J.,	Mpls.
Stewart, Amasa,	Lamarque, Texas.	Somerville, Wm.	Rochester

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